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Table of Content

EDITORIAL

FATIGUE IN PATIENTS WITH CHOLANGIOCARCINOMA: TREAT OR WAIT-AND-SEE?
Surachai Maninet, Khwanprapat Chanbunlawat
(pp 120-122)

ORIGINAL RESEARCH ARTICLE

PAIN CHARACTERISTICS ON PATIENT UNDERTAKING HEMODIALYSIS
Fatin Hapsah Affah, Intansari Nurjannah, Ery Yanuar Akhmad Budi Sunaryo
(pp 123-127)

INFLUENCE OF LOW-SODIUM DIET MANAGEMENT ON THIRST RESPONSE IN END STAGE RENAL DISEASE PATIENTS WITH HEMODIALYSIS
Lisbet Gurning, Jenny Marlindawani Purba, Cholina Trisa Siregar
(pp 128-134)

COMPARISON OF EFFECTIVENESS OF A PROGRESSIVE MOBILIZATION AND MOZART MUSIC THERAPY ON NON-INVASIVE HEMODYNAMIC STATUS CHANGES IN PATIENTS WITH HEAD INJURY IN THE INTENSIVE CARE UNIT
Novi Indriani, Bedjo Santoso, Arwani Arwani, Mardiyono Mardiyono
(pp 135-144)

EFFECT OF POSITIONING ON BLEEDING COMPLICATION AND LOW BACK PAIN AFTER DIAGNOSTIC CORONARY ANGIOGRAPHY IN PATIENTS WITH CORONARY HEART DISEASE IN AN INTEGRATED HEART CARE CENTER IN INDONESIA
Theresia Febriana Christi Tyas Utami, Diyah Fatmasari, Mardiyono Mardiyono, Shobirun Shobirun
(pp 145-153)

EXPERIENCE OF BARRIERS TO HYPERTENSION MANAGEMENT IN MINANGKABAU ETHNIC GROUP IN PAYAKUMBUH INDONESIA: A PHENOMENOLOGICAL STUDY
Vera Kurnia, Dewi Suza, Yesi Ariani
(pp 154-160)

THE COMPARISON OF THE EFFECT OF HONEY AND CHLORHEXIDINE IN PREVENTING VENTILATOR ASSOCIATED PNEUMONIA IN PATIENTS ON MECHANICAL VENTILATION
Syaukia Adini, Bedjo Santoso, Sarkum Sarkum, Sudirman Sudirman
(pp 161-167)

EFFECT OF 14 POINTS ACUPRESSURE ON UPPER AND LOWER EXTREMITY MUSCLE STRENGTH LEVELS IN PATIENTS WITH NON-HEMORRHAGIC STROKE
Lalu Hersika Asmawariza, Suharyo Hadisaputro, Mardiyono Mardiyono, Desak Made Wenten Parwati
(pp 168-176)

THE EFFECTIVENESS OF COACHING USING SBAR (SITUATION, BACKGROUND, ASSESSMENT, RECOMMENDATION) COMMUNICATION TOOL ON NURSING SHIFT HANDOVERS
Vitri Dyah Herawati, Devi Nurmalia, Tri Hartiti, Luky Dwiantoro
(pp 177-185)

MUSIC AND AROMATHERAPY: A GOOD COMBINATION FOR REDUCING ANXIETY AND STABILIZING NON-INVASIVE HEMODYNAMIC STATUS IN PATIENTS IN THE INTENSIVE CARE UNIT
Ferry Kumala, Diyah Fatmasari, Kurniati Puji Lestari, Suharyo Hadisaputro
(pp 186-194)

EFFECT OF MINDFULNESS INTERVENTION ON THE INTENSITY OF PAIN IN NASOPHARYNGEAL CANCER PATIENTS UNDERGOING RADIATION TREATMENT
Anna Jumatul Laely, Awal Prasetyo, Chandra Bagus Ropyanto
(pp 195 – 201)
ABORTION AND ITS INFLUENCING FACTORS: A QUALITATIVE STUDY IN THE DETENTION CENTER  
Rini Hendari, Dahlan H Ahmad, Martiningsih Martiningsih  
(pp 202-210)

EFFECT OF BRAIN EXERCISE AND BENSON RELAXATION THERAPY ON DEPRESSION LEVEL IN THE ELDERLY IN THE ELDERLY SOCIAL SERVICE UNIT  
Wulansari Wulansari, Ani Margawati, Rita Hadi W  
(pp 211-218)

EFFECT OF HYPNOBIRTHING ON THE PROGRESS OF THE LATENT PHASE OF LABOR IN PRIMIGRAVIDA  
Wiwik Mudihayati, Syarif Thaufik Hidayat, Nur Khafidhoh, Ari Suwondo  
(pp 219-225)

EFFECT OF SPIRITUAL BASED MINDFULNESS INTERVENTION ON EMOTIONAL CONTROL IN ADULT PATIENTS WITH PULMONARY TUBERCULOSIS  
Donatus Korbianus Sadipun, Meidiana Dwidiyanti, Megah Andriany  
(pp 226-231)

EXPOSURE TO MASS MEDIA AS A DOMINANT FACTOR INFLUENCING PUBLIC STIGMA TOWARD MENTAL ILLNESS BASED ON SUNRISE MODEL APPROACH  
Ni Made Sintha Pratiwi, Lilik Zuhriyah, Lilik Supriati  
(pp 232-241)

THE IMPACT OF COMBINATION OF BREASTFEEDING AND EFFLEURAGE MASSAGE IN REDUCING PAIN RESPONSE IN INFANTS INDUCED BY BLOOD SAMPLING IN C-REACTIVE PROTEIN TEST: AN OBSERVATIONAL CROSS-SECTIONAL STUDY  
Alfi Maziyah, Diyah Fatmasari, Desak Made Wenten Parwati, Rr. Sri Endang Pujiasutti  
(pp 242-248)

EFFECT OF LO'I KARANA ON PAIN LEVEL IN POSTPARTUM MOTHERS  
Rini Hendari, Dahlan H Ahmad, A Haris  
(pp 249-255)

THE INFLUENCE OF SUNDANESE ZITHER (KACAPI) MUSIC THERAPY ON ANXIETY LEVELS IN PRE-CARDIAC CATHETERIZATION PATIENTS  
Kristiana Prasetya Handayani, Andrew Johan, Chandra Bagus Ropyanto  
(pp 256-262)

THE LIVED EXPERIENCE OF PATIENTS WITH PRE-DIALYSIS CHRONIC KIDNEY DISEASE: A QUALITATIVE STUDY  
Tri Hapsari Retno Agustiowati, Ratna Sitorus, Agung Waluyo, Besral Besral  
(pp 263-270)

THE CORRELATION OF PARENTING STYLE WITH COGNITIVE DEVELOPMENT IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER  
Dwi Fitri Genisti, Ni Komang Sukra Andini, Ni Luh Gede Puspita Yanti  
(pp 271-278)
Fatigue has been identified as one of the most distressful and significant symptoms among patients with cholangiocarcinoma (CCA) (Ziętarska, Krawczyk-Lipiec, Kraj, Zaucha, & Małgorzewicz, 2015). The prevalence of fatigue has been reported to be from 82% to 100% (Lan, Lin, Chen, Lin, & Wang, 2015; Somjaivong, Thanasilp, Preechawong, & Sloan, 2011). The severity of fatigue can increase from moderate to severe levels, and persist for long-term during and after completion of treatments such as chemotherapy or radiotherapy (Ziętarska et al., 2015).

Fatigue is a subjective, unpleasant condition which incorporates total body feelings ranging from tiredness to exhaustion, creating an unrelenting overall condition which interferes with individuals’ ability to function to their normal activity (Ream & Richardson, 1997). CCA patients experience a variety of potential factors, which caused fatigue. For example, the most important factor is inadequate self-management because patients do not know how to manage it properly (Dengso, Bangsgaard, & Marcussen, 2017). Patients adopted a “let wait and see” approach rather than consulting their health care providers.

Lacking recognition and misinterpretation of fatigue cause them for delayed help-seeking from others (Dengso et al., 2017). Negative perception regarding to fatigue as a sign of terminal stage of disease, incurable, soon death, limited treatment options, and a depressed state of mind induced fatigue (Juangpanich, Tawalee, Knasen, & Suguman, 2003). Sleep disturbance was associated with the presence of fatigue (V Sun et al., 2008). Depression also affected sleep disturbance as a result of persistent feelings of fatigue (Huang & Lin, 2009). In addition, cachexia resulted from lack of appetite and side effects of chemotherapy lead to fatigue (V Sun, 2010).

Occurrence of fatigue impacts various dimensions of CCA patients’ life. Ziętarska et al. (2015) reported that moderate to severe levels of fatigue caused treatment discontinuation. Fatigue in this population caused sleeping difficulty and depression (Huang & Lin, 2009), reducing physical and emotional status, avoiding social participation (V Sun et al., 2008), having difficulty to perform typical cognitive tasks, changing employment status (Lai et al., 2007), and decreasing overall quality of life (QOL) (Lan
et al., 2015). High levels of fatigue associated with elevated eosinophil percentages which can be a predictor of shorter survival (Steel et al., 2010). Fatigue was significantly associated with abnormal levels of white and red blood cell counts, hemoglobin levels and cytokine levels along duration of receiving chemotherapy (Hammond, 2010). Unrelieved fatigue among CCA patients also burdens to their family caregivers. Lai et al. (2007) indicated that 65% of family members have to take at least one day off work and spend more than 10 hours to looking after patients (Lai et al., 2007). Therefore, fatigue impacts overall CCA patients’ life and it needs to be managed urgently.

A few studies in literature focused on nursing interventions to prevent or alleviate fatigue in CCA patients. For instance, Ream, Richardson, and Alexander-Dann (2006) determined whether or not a supportive intervention could reduce fatigue in advanced mixed cancers, including CCA patients. They found that the intervention group reported significantly less fatigue, lower associated distress, and less impact of fatigue on valued pastimes than the control group. Another study, Armes, Chalder, Addington-Hall, Richardson, and Hotopf (2007) conducted brief behaviorally oriented intervention on physical functioning and fatigue in 60 patients with mixed cancer, included CCA patients. They found the program was significantly increased functional status but not significantly reduced fatigue in intervention group. This may be limited by the details in program focus more on encouraging patients to do aerobic exercise which, may be would not acceptable for some cancer types. Moreover, the primary outcome of the intervention is not focus on reducing fatigue. Therefore, the next question is “do we just adopt ‘wait and see’ approach or plan to find the new strategy to reduce fatigue”? As fatigue is a symptom that is difficult and challenging to manage, sometimes wait-and-see approach may help patients make better medical choices, however, coping with such uncertainty is difficult for some people. As a nurse, our roles are very important to find strategy to reduce fatigue and its impact among CCA patients and find good coping in dealing with it. The clinical therapies for fatigue should emphasize on the observation of those at high risk, the prevention and early detection of acute or chronic fatigue states, the tailoring of interventions according to cause of fatigue, and the continuing evaluation of treatment effectiveness. Importantly, organizing or developing fatigue management program should base on factors that influence CCA patients individually. CCA patients should have specific coping strategies, which are developed from past personal accomplishments, various experiences, emotional arousal, and verbal persuasion from healthcare providers.

Declaration of Conflicting Interest
None declared.

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Author Contribution
Both authors contributed equally in this study.

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PAIN CHARACTERISTICS ON PATIENT UNDERTAKING HEMODIALYSIS

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Abstract
Background: Research in pain especially in patients undertaking hemodialysis is important to be conducted in order to help the process of their hemodialysis therapy.

Aim: The aim this study was to describe pain characteristic on hemodialysis patient using Visual Analogue Scale (VAS) and mnemonic PQRST (Provocation, Quality, Regio, Radiation and Time).

Methods: This was a descriptive quantitative cross-sectional research. The number of respondents were 72 and they routinely underwent hemodialysis therapy twice a week. The study was conducted in one central hospital in Yogyakarta Indonesia on February to March 2017. Univariate analysis was used to describe respondents’ pain characteristic.

Results: The majority of respondents (51.39%) experienced moderate pain, followed by mild pain (33.33%) and severe pain (15.28%). The most painful characteristic in the provocation aspect was movement (87.50%), and the quality of pain was knife-like pain (83.33%). Moreover, hand was the major area of pain (84.72%), and there was no radiation of pain (91.67%). Most of pain was intermittent (97.22%). Of 53% of respondents expressed that the pain had an impact on their lives, specifically in their activities (52.63%), followed by others (15.79%), nausea/vomiting (15.79%), sleep disturbance (13.16%), and appetite (13.16%). However, the pain did not have an impact on their emotion.

Conclusion: The respondents experienced mostly moderate pain. The percentage of pain characteristics on PQRST mnemonic was above 80%, and more than half of the respondents experienced moderate pain. Majority of the respondents felt the impacts of the pain in their lives.

Keywords: hemodialysis; pain; Visual Analogue Scale; mnemonic PQRST

INTRODUCTION

Hemodialysis is a therapy for patient with chronic renal failure and having a problem with electrolyte and fluid imbalanced (Black & Hawks, 2009). Hemodialysis will be applied when renal function less than 75%. However, hemodialysis therapy may cause pain either acute pain or chronic pain (Johnson, Feenally, & Floge, 2014). Pain is considered as vital sign and need to be assessed by nurses besides body temperature, blood pressure, heart rate and respiratory rate (Ball, Dains, Flynn, Solomon, & Stewart, 2014). The reason why pain is considered as vital sign because pain can be used to measure patient’s quality of life (Hsu et al., 2014). However, pain is a unique experience for each...
patient and it has different characteristic and intensity for each patient (Ball et al., 2014).

Pain is general symptoms mostly experienced by patient undertaking hemodialysis and creates overwhelmed feeling for patient (Davison, 2003). Pain also influences quality of life and also individual role performance, create anxiety and depression for patient undertaking hemodialysis (Theofilou, Aroni, Tsironi, & Zyga, 2013).

Research found that as many as 50% patient undertaking hemodialysis therapy experience acute pain and this lead to the most nursing diagnoses established in this population (Nurjannah & Mailani, 2016). Majority patients who undertake hemodialysis have moderate pain (Santoro et al., 2013). One research found that in 53 patients undertaking hemodialysis there were 81.1% of patient expressed cramps as their characteristic of pain, 62.3% expressed dizziness and 15.1% expressed fistula pain when undertaking hemodialysis (Polkinghome & Kerr, 2016). Other research found that when undertake hemodialysis, patient felt pain on their musculoskeletal, pain related procedure, peripheral neuropathy and peripheral vascular disease (O'Connor & Corcoran, 2012). In addition, another research also found that one of the cause of pain was related to hemodialysis procedure (Harris et al., 2011). Needle insertion, muscle cramps, abdominal and cardiac pain, and headaches were patient’s pain during hemodialysis therapy (Santoro et al., 2013). However, currently the prevalence, the cause and the level of pain on patient undertaking hemodialysis rarely to be explored (Davison, 2003).

METHODS

Study design
This is a descriptive quantitative cross-sectional research. The aim of this study is to identify pain characteristic on hemodialysis patient using Visual Analogue Scale (VAS) and mnemonic PQRST.

Setting
Research was conducted in one haemodialysis unit, in one central hospital in Yogyakarta, Indonesia.

Population and sample
Sample method was using simple random sampling. Inclusion criterias were patient more than 18 years old, routinely undertaking hemodialysis and experienced pain from mild, moderate or severe pain from VAS score. Exclusion criteria was patient unable to communicate.

Instruments
Instrument in this study was a questionnaire. This questionnaire consisted of demographical data, Visual Analogue Scale (VAS) and mnemonic PQRST. Visual Analogue Scale is an instrument to measure pain in quantitative method. This instrument consist of horizontal line with scale from 0 to 10 in which 0 means no pain and 10 means severe pain (da Silva et al., 2015). Visual analogue scale is a standard instrument which no need to be measured for its validity and reliability (Hjermstad et al., 2011). Mnemonic PQRT is one of mnemonic or abbreviation that used to assess pain (Lanser & Gesell, 2001). However, mnemonic PQRST have not been measured for validity and reliability.

Data collection and analysis
Data collection was conducted from February to March 2017 involved 72 respondents. Univariate analysis was used to describe respondent’s characteristic such are age and gender. This research has been approved by Ethic Committee from Faculty of Medicine Universitas Gadjah Mada on 13th December 2017.

RESULTS
The characteristic of the respondents can be seen in Table 1 below.
Table 1 Respondents’ characteristic of hemodialysis patients with acute pain (n=72)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency (f)</th>
<th>Percentage (%)</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>36</td>
<td>50</td>
<td>51.52 ±14.16</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>50</td>
<td>52.3 ±12.96</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22-28 years old</td>
<td>3</td>
<td>4.17</td>
<td>51.91 ±13.48</td>
</tr>
<tr>
<td>29-35 years old</td>
<td>7</td>
<td>9.72</td>
<td>52.3 ±12.96</td>
</tr>
<tr>
<td>36-42 years old</td>
<td>7</td>
<td>9.72</td>
<td></td>
</tr>
<tr>
<td>43-49 years old</td>
<td>14</td>
<td>19.44</td>
<td></td>
</tr>
<tr>
<td>50-56 years old</td>
<td>15</td>
<td>20.83</td>
<td></td>
</tr>
<tr>
<td>57-63 years old</td>
<td>9</td>
<td>12.50</td>
<td></td>
</tr>
<tr>
<td>64-70 years old</td>
<td>11</td>
<td>15.28</td>
<td></td>
</tr>
<tr>
<td>71-77 years old</td>
<td>5</td>
<td>6.94</td>
<td></td>
</tr>
<tr>
<td>78-84 years old</td>
<td>1</td>
<td>1.39</td>
<td></td>
</tr>
<tr>
<td>Length of hemodialysis therapy (in month)</td>
<td></td>
<td></td>
<td>55.12 ± 60.48</td>
</tr>
</tbody>
</table>

Acute pain level of patient undertaking hemodialysis

The majority of the respondents experienced moderate pain (Table 2).

Table 2 Acute pain scale on patients undertaking hemodialysis (n=72)

<table>
<thead>
<tr>
<th>Pain level</th>
<th>Frequency (f)</th>
<th>Percentage (%)</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>24</td>
<td>33.33</td>
<td>2.8 ± 0.3</td>
</tr>
<tr>
<td>Moderate</td>
<td>37</td>
<td>51.39</td>
<td>4.8 ± 0.5</td>
</tr>
<tr>
<td>Severe</td>
<td>11</td>
<td>15.28</td>
<td>7.0 ± 1.1</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>100.00</td>
<td>4.8 ± 0.6</td>
</tr>
</tbody>
</table>

Acute pain characteristic of patient undertaking hemodialysis

Pain characteristic consisted of seven components from PQRST which are: provocation, quality, region, radiation, severity, time and impact that could be seen in the Table 3 below.

Table 3 Pain acute characteristic based on mnemonic PQRST on patient undertaking hemodialysis (n=72)

<table>
<thead>
<tr>
<th>Pain characteristic</th>
<th>Frequency (f)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provocation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Movement</td>
<td>63</td>
<td>87.50</td>
</tr>
<tr>
<td>Laying</td>
<td>3</td>
<td>4.17</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>8.33</td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knife-like Pain</td>
<td>60</td>
<td>83.33</td>
</tr>
<tr>
<td>Throbbing</td>
<td>5</td>
<td>6.94</td>
</tr>
<tr>
<td>Pulling</td>
<td>1</td>
<td>1.39</td>
</tr>
<tr>
<td>Cramps</td>
<td>15</td>
<td>20.83</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>1.39</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td>61</td>
<td>84.72</td>
</tr>
<tr>
<td>Foot</td>
<td>12</td>
<td>16.67</td>
</tr>
<tr>
<td>Head</td>
<td>5</td>
<td>6.94</td>
</tr>
<tr>
<td>Arm</td>
<td>1</td>
<td>1.39</td>
</tr>
</tbody>
</table>

DISCUSSION

The results showed that the number of male and female patients undertaking hemodialysis was equal. This result was similar with the data stated from Indonesian nephrology association (PERNEFRI, 2014).

The results also showed that most of respondents undertook hemodialysis for about 4 years similar to previous research (Claxton, Blackhall, Weisbord, & Holley, 2010). All respondents also undertook hemodialysis twice a week (PERNEFRI, 2014).

In regards to the characteristics of pain, the majority of respondents experienced moderate pain. This pain might be influenced by demographic characteristic or ethnic, dialysis
therapy process, cause of pain, cause of chronic renal disease and other comorbid factors (Davison, 2003). The perception related to pain of patient undertaking hemodialysis can be also influenced by increasing level of stress (Harris et al., 2011). Moreover, it is known that pain is subjective sensation in which individual might have different perception and tolerance level. The tolerance level toward pain is a point in which individual unable to feel the pain anymore with higher severe level of pain and longer duration of pain (Potter & Perry, 2011).

The results also showed that the movement was the most factor that triggered pain as many as 87.50% of the respondents. The respondents stated that the pain is mostly caused by invasive procedure and this is the reason why their quality of pain was mostly knife-like pain. This is similar with other research, which invasive procedure (needle insertion), uremia complication which lead to cramp and comorbid factors were also the cause of pain (Harris et al., 2011).

As invasive procedure is considered as the cause of pain, in this study, hand is a part of body with the most of pain (84.72%). It is because this area is an area for hemodialysis procedure insertion (Özkan & Ulusoy, 2011). In addition, part of the body which experience pain most was lower extremity, even though hand, arm, abdomen may also experience cramp in hemodialysis process (Özkan & Ulusoy, 2011).

The majority of the respondents also felt that there was no radiation in the pain. It is because superficial or cutaneous stimulation is localized (Potter & Perry, 2011). In regard to the timing, similar to other research, the most pain experienced by respondents was intermittent, which means it does not feel continuously (Carpenito, 2013). The pain because of invasive procedure occurred in short period of time (Potter & Perry, 2011). For the impact of pain, the majority of the respondents stated that pain had an impact to their activities (Santoro et al., 2013). This is similar with another research revealed that pain undertaking hemodialysis had physical, mental, and social impact, including decreased daily activities, sleep disturbance, symptoms of anxiety and depression (Santoro et al., 2013).

CONCLUSION

The majority of the respondents experienced moderate pain, with movement as a factor that makes pain getting worse. A knife-like pain was the most quality of pain, with hand as the region for feeling pain. Most of the respondents felt no radiation in pain and characterized by intermittent pain.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

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126
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INFLUENCE OF LOW-SODIUM DIET MANAGEMENT ON THIRST RESPONSE IN END STAGE RENAL DISEASE PATIENTS WITH HEMODIALYSIS

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Abstract
Background: Patients with hemodialysis often have difficulty in controlling their fluid intake although the obedience to follow fluid and dietary restriction is the key of hemodialysis success management.
Objective: The aim of this study was to examine the effect of low-sodium diet management on thirst response in end stage renal disease patients with hemodialysis.
Methods: This was a quasi-experimental study with pre-posttest with control group design. Using consecutive sampling 88 respondents were selected, which 44 assigned in each group. Thirst distress scale and visual analog scale questionnaire were used for data collection. Wilcoxon and Mann Whitney test were used for statistical analysis.
Results: Of the total of respondents, thirty-seven respondents experienced a decrease in thirst distress scale with p= 0.000 (p <0.05); and 30 respondents experienced a decrease in visual analog scale with p=0.000 after given low sodium diet management. There was difference of thirst distress scale score (p=0.008) and visual analog scale of thirst score (p=0.048) between intervention and control group. The importance of continuous of diet education with counseling and home visit can increase self-management behaviors.
Conclusion. Low sodium diet management could reduce the thirst response in end stage renal disease patients with hemodialysis.

Keywords: hemodialysis; low sodium diet; thirst

INTRODUCTION

Hemodialysis is a modalities therapy of renal replacement for renal failure patient. Renal failure is a condition in which the kidneys are unable to adequately filter toxins and waste products from blood with progressive and irreversible (Dorgalaleh et al., 2013). Hemodialysis is widely used worldwide and its prevalence increases every year (Cleemput & De Laet, 2013; Ebrahimi, Sadeghi, Amanpour, & Dadgari, 2016; Yusop, Mun, Shariff, & Huat, 2013). The prevalence of hemodialysis in the United States in 2012 is 451,000 and is expected to increase to 632,000 by 2025 (Wetmore & Collins, 2016), whereas based on data from the Indonesian Renal Registry (IRR, 2014) there are 28,882 patients reporting hemodialysis in Indonesia with 957 people are located in North Sumatra Province.

Hemodialysis depends on the patient’s level adherence to participate in following the fluid and dietary restriction of the recovered fluid (Chironda & Bhengu, 2016). The obedience of fluid restriction is the most complex thing on hemodialysis patients. Fluid restriction
makes excessive thirst leads to excessive intake of water, moreover patients who live in the country with the temperature exceeds 35 degrees will find difficulty to manage their water drink intake. Some studies report that 39-95% of hemodialysis patients have experience of thirst with six major factors affecting thirst is potassium depletion, acute increase in plasma urea, hyperglycemia, plasma sodium concentration, angiotensin II and psychological factors (Kara, 2013; Sacrias, Rathinasamy, Elavally, & Arjunan, 2016). Bruzda-Zwiech, Szczepanska and Zwiech also add other factors which can influence thirst such as lack of saliva secretion, changes in biological as well as biochemical, hormonal abnormality and the side effect of medicine (Bruzda-Zwiech, Szczepatska, & Zwiech, 2014).

In critical ill patients, thirst is a common source of distress (Zehm, Mullin, & Zhang, 2016). Thirst causes oral dryness due to decreased flow and salivary production so that the viscosity of saliva increase and raises various problems such as burning mouth, increased thirst, loss of taste, difficulty of chewing, swallowing, speaking, oral breathing, halo cytosis, unpleasant taste and odor, sensitive teeth, increased risk of lesions in mucosa, gums, and tongue, as well as an increased risk of candidacies, tooth decay, periodontal disease, as well as bacterial and fungal infections of the mouth (Al-yassiri, 2014; Bossola & Tazza, 2012).

National Kidney Foundation-Kidney Disease Outcomes Quality Initiative (NK- KDOQI) Guidelines recommends that hemodialysis patients intake of sodium is <2400 mg/day or equivalent to 5-6 gram/day of table salt to prevent cardiovascular complications, while European Nutrition Guide recommends as amount 2000 – 2300 mg/day of sodium intake or equivalent to 5-6 gram/day of table salt and based on Kidney Organization Guide recommended amount of sodium are 1500-2000 mg/day. In fact, many hemodialysis patients do not carry out that recommendation.

Previous study shows that average daily salt intake of hemodialysis patients in Japan is 12.6 gram (~5.5 gram or 240 mmol natrium), while hemodialysis patients in Spain as amount 10 gram (~4.3 gram or 189 mmol natrium) and patient in America counted 9.7 gram (~4.2 gram or 183 mmol natrium) (Mc Causland, Waikar, & Brunelli, 2012). Another study indicates the average daily sodium consumed on hemodialysis patients in Brazil is amount 8.6 gram/day resulting from use of salt and food additives that contain salty in their diet and causing increased of thirst, IDWG and blood pressure (Nerbass et al., 2013).

The amount of daily intake of sodium intake is strongly influenced by the ability of the patient in maintaining himself (self-management) in order to control the symptoms and disease processes. Li et al. in their study stated that self-management is interpreted as a task that must be done by patients from day to day in controlling or reducing the impact of disease on physical health status. The components of self-management include the acceptance of information, drug management, symptom management, psychological consequences management, lifestyle changes, social support, and communication. Adherence to special diets such as low-salt diet as well as fluid restriction is one kind of the symptom management component in hemodialysis patients (Li, Jiang, & Lin, 2014).

It is concluded that fluid restriction can make the hemodialysis patient complain of thirst and dry mouth, thus requiring non-pharmacologic therapy to overcome the problem. Therefore, this study aimed to examine the influence of management of low-salt diet on thirst in hemodialysis patients.

**METHODS**

**Study design**

This was quasi-experimental study with pre-posttest control group.
Sample
The ESRD patients with thirst problem were recruited from 11 September to 11 October 2017. This study enrolled men and women with ESRD with 44 respondents for each group (study and control). The inclusion criteria in this study were: 1) aged over 18 years, 2) performed routine hemodialysis therapy over 6 months, 3) patient and family can communicate and read using Indonesian language, 4) willing to cooperate in doing research (shown by filling out the width of the participant's consent). The study exclusion criteria include: 1) has a history of mental disorders, 2) orientation disorder, 3) treatment using psychotropic drugs.

Instrument
Welch Thirst Distress Scale was used for this study (Welch & Molzahn, 2002). Thirst Distress Scale (TDS) have 6 questions with Likert scale measurement, 1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree. Totally score interpretation 1-10: mild thirst, 11-20: moderate thirst and 21-30: worst thirst. For intensity of thirst measurement, visual analogue scale (VAS) was used, with interpretation 0-3: mild thirst, 4-6: moderate thirst, 7-10: worst thirst.

Data analysis
Analysis of data used Wilcoxon test for within group and Mann Whitney test between groups (p< 0.05).

Table 1 Characteristic of respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Intervention (n = 44)</th>
<th>Control (n = 44)</th>
<th>F</th>
<th>P value</th>
</tr>
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<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Average</td>
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<td>52.55</td>
<td>12.27</td>
</tr>
<tr>
<td>18 – 34 years old</td>
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<td>20.5</td>
<td>5</td>
<td>11.4</td>
</tr>
<tr>
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<td>36.4</td>
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</tr>
<tr>
<td>55 – 64 years old</td>
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<tr>
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<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td>52.3</td>
<td>30</td>
<td>68.2</td>
</tr>
<tr>
<td>Female</td>
<td>21</td>
<td>47.7</td>
<td>14</td>
<td>31.8</td>
</tr>
</tbody>
</table>

Ethical consideration
This study has been approved by the Research Ethics Committee from the Commission of Health Research Ethics Faculty of Nursing University of Sumatera Utara No. 1271/VIII/SP/2017.

RESULTS

Characteristic of Respondents
The mean of respondents’ age in this study was 48.68 ± 14.15 in the intervention group and 52.55 ± 12.27 in the control group. The majority of respondents were aged 35-54 years, which 36.4% in the intervention group and 40.9% in the control group. Majority of gender in this study was male, which 52.3% in the intervention group and 68.2% in the control group. Based on marital status, 68.2% were married in the intervention group and 77.3% in the control group. There were 56.8% of respondents were not working in the intervention group and 68.2% in the control group. Based on educational background, 31.8% in intervention group was college graduates and the control group 38.6% was graduated from senior high school. Of 48.86% of respondents in the intervention group and 50% in the control suffered from renal impairment caused by hypertension disease. The majority of respondents in the intervention and control group had taken regular hemodialysis with more than 1 year (61.4%).

Belitung Nursing Journal, Volume 4, Issue 2, March-April 2018
<table>
<thead>
<tr>
<th>Educational</th>
<th>Occupation</th>
<th>Marital Status</th>
<th>Race</th>
<th>During Hemodialysis</th>
<th>Etiology of Hemodialysis</th>
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<tr>
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<td>Employee</td>
<td>Single</td>
<td>Batak</td>
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<td>Hypertension</td>
</tr>
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<td>9</td>
<td>6</td>
<td>33</td>
<td>17</td>
<td>17</td>
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<tr>
<td>13.6</td>
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<td>Junior high school</td>
<td>Entrepreneur</td>
<td>Married</td>
<td>Jawa</td>
<td>&gt; 1 year</td>
<td>Diabetes mellitus</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>30</td>
<td>6</td>
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<td>13.6</td>
<td>61.4</td>
<td>36.4</td>
</tr>
<tr>
<td>Senior high School</td>
<td>Unemployee</td>
<td>Widow/divorce</td>
<td>Minang</td>
<td></td>
<td>Kidney stones</td>
</tr>
<tr>
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<td>25</td>
<td>8</td>
<td>0</td>
<td></td>
<td>6</td>
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<tr>
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<td>56.8</td>
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<td></td>
<td>13.6</td>
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<td>Malay</td>
<td></td>
<td>Another</td>
</tr>
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<td></td>
<td></td>
<td>1</td>
<td></td>
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<td>4</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

Distribution of Thirst Distress Scale (TDS), Visual Analog Scale (VAS) and Interdialytic Weight Gain (IDWG)

Of the total respondents, 56.82% of respondents in the intervention group experienced moderate thirst and 43.18% with heavy thirst before low sodium management intervention with TDS measurement. In the control group, 11.36% of respondent experienced with mid thirst and 43.18% of moderate thirst and 45.45% of heavy thirst before intervention done. After intervention of low sodium management, of 2.27% of respondents in the intervention group experienced mild thirst, 90.91% experienced moderate thirst and 6.82% with heavy thirst. In the control group, after intervention, 6.82% of respondents experienced mild thirst, 47.72% of moderate thirst and 40.91% of heavy thirst.

Based on VAS measurement, before intervention 56.82% of respondents from the intervention group experienced moderate thirst and 43.18% experienced heavy thirst. In the control group, 11.36% of respondents experienced mild thirst, 47.72% of moderate thirst and 40.91% of heavy thirst. While after intervention in the intervention group there were 2.27% respondents experienced mild thirst, 90.91% experienced moderate thirst and 6.82% with heavy thirst. And in the control group there were 6.82% of respondents experienced mild thirst, 59.09% experienced moderate thirst and 34.09% with heavy thirst.

The results also shows that there were 6.8% of respondents experienced mild IDWG, 59.1% of respondents experienced moderate IDWG and 34.1% of respondents experienced heavy IDWG in the intervention group before given low sodium diet management; while in the control group there were 4.5% of respondents experienced mild IDWG, 81.8% of respondents experienced moderate IDWG and 13.6% with heavy IDWG. After low sodium diet management in the intervention group, 22.7% of respondents experienced mild IDWG and 77.3% of respondents experienced moderate IDWG, and in the control group there were 4.5% of respondents experienced mild IDWG, 77.3 of respondents with moderate IDWG and 18.2% with heavy IDWG.
Table 2 Distribution of TDS, VAS and IDWG

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
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<tbody>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>Intervention</td>
<td>TDS</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VAS</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>IDWG</td>
<td>3</td>
</tr>
<tr>
<td>Control</td>
<td>TDS</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>VAS</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>IDWG</td>
<td>2</td>
</tr>
</tbody>
</table>

Thirst Before and After Low Sodium Management Treatment

Wilcoxon Signed Rank Test result showed that there was a difference of thirst between before and after low sodium diet management intervention in the intervention group measured by TDS and VAS. But these results differ from the control group. In the control group, the results of data processing showed that there was no difference of thirst between before and after low sodium management treatment measured by TDS and VAS.

There were 37 respondents in the intervention group had a decrease of TDS score and 7 respondents with TDS ‘no difference’ with significant value 0.000 (p<0.05) after low sodium diet management. For VAS measurement there were 30 respondents on intervention group had a decrease of VAS score and 14 respondents with VAS ‘no difference’ with significant value 0.000 (p<0.05) after low sodium management treatment. In the control group, there were 17 respondents had an increase of TDS score, 10 respondents had a decrease of TDS score and 17 respondents with TDS ‘no difference’ and significant value 0.399 (p>0.05) after low sodium diet management treatment. At the same time, the result of VAS measurement showed that there were 9 respondents had an increase of VAS score, 13 respondents had a decrease of VAS score and 22 persons with ‘no difference’ and significant value 0.577 (p>0.05) after low sodium diet management.

Table 3 Thirst response after intervention of low sodium diet

<table>
<thead>
<tr>
<th></th>
<th>Mean Rank</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase</td>
<td>Decrease</td>
</tr>
<tr>
<td>Intervention</td>
<td>TDS</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>VAS</td>
<td>0</td>
</tr>
<tr>
<td>Control</td>
<td>TDS</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>VAS</td>
<td>9</td>
</tr>
</tbody>
</table>

Influence of Low Sodium Diet Management on Hemodialysis Patients

The Mann Whitney test results that there was a difference of thirst as measured by TDS after low sodium diet management in the intervention and control group with a significance p=0.008 (p<0.05). The same result is also shown on thirst as measured by VAS, which there was a difference of thirst intensity after low sodium diet management in the intervention and control group with a significance p=0.048 (p<0.05)
Table 4 Low sodium management influence of thirst in chronic renal failure patients

<table>
<thead>
<tr>
<th></th>
<th>Intervention Mean Rank</th>
<th>Control Mean Rank</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>47.45</td>
<td>41.55</td>
<td>0.276</td>
</tr>
<tr>
<td>Posttest</td>
<td>37.36</td>
<td>51.64</td>
<td>0.008</td>
</tr>
<tr>
<td>VAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>45.27</td>
<td>43.73</td>
<td>0.772</td>
</tr>
<tr>
<td>Posttest</td>
<td>39.45</td>
<td>49.55</td>
<td>0.048</td>
</tr>
</tbody>
</table>

DISCUSSION

Low sodium diet management provides significant benefits for thirst reduction in hemodialysis patient due to fluid retention. These results are consistent with previous study that increased sodium salt intake in excess of body requirements will result in an increase in plasma osmotic pressure, resulting in an osmotic thirst response as a mechanism for fluid and electrolyte balance (Stachenfeld, 2008). It is also acknowledged that in addition to salt can cause dry mouth and the consequence is increased drinking response, low-salt diet conduct also increased blood pressure of hemodialysis patient (Leshem, 2015).

The number of respondents who had a decrease of thirst respondent was more in the intervention group compared with the control group because the respondents in the intervention group carried out the low sodium diet treatment that researchers had designed in their life for 3 weeks under the supervision of researchers. In addition, within 3 weeks of treatment, researchers also carried out the repeated education continuously and home visits as a form of supervision of the education.

Decreased thirst also occurred in the control group but fewer in number than the intervention group. This occurs because the hemodialysis patients treated in hemodialysis unit of Adam Malik Medan Hospital also obtains the same information about low sodium diet for hemodialysis patient from the researchers and the nurse on hemodialysis unit. While the researchers did not perform the repetitive and continuous educational actions as well as the home visits in this control group as a form of educational supervision.

Continuous education and supervision can improve the self-management behavior of patient every day that shown by reducing the daily salt intake behavior. Reducing daily salt intake behavior is one form of patient adherence toward hemodialysis regimen management.

Dietary behavior is a very complex and greatly affects the treatment. The cause of non-compliance with the sodium restriction diet is the lack of patient acceptance of the bland taste resulting from the sodium, lack of knowledge and acceptance of the patient on low-salt foods and lack of socialization of health workers on low-salt diet (McMahon et al., 2012).

Adherence to salt or sodium restriction can be achieved if there is a synergy between patient, family (caregiver) as well as health workers. Low sodium diet management applied in this study is a synergy approach that is meant by doing education, counseling guidance and home visit as a form of observation with expectation of positive behavior for patient in accordance with education.

CONCLUSION

Based on these results, it can be concluded that low sodium food management (consisting of education, counseling and home visits) has an effect in reducing the thirst response in
patients with end-stage renal disease with hemodialysis. This study provides an understanding that education supported by counseling and supervision can improve understanding and compliance of hemodialysis patients against diet and fluid restriction policies.

Declarations of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

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COMPARISON OF EFFECTIVENESS OF A PROGRESSIVE MOBILIZATION AND MOZART MUSIC THERAPY ON NON-INVASIVE HEMODYNAMIC STATUS CHANGES IN PATIENTS WITH HEAD INJURY IN THE INTENSIVE CARE UNIT

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Abstract

**Background:** The instability of hemodynamic status in patients with head injury with decreased consciousness has an effect on the increase of intracranial pressure. The recovery of hemodynamic status can be done through nursing intervention either by providing a sensory stimulus (music therapy) or motor stimulus (progressive mobilization).

**Objective:** To compare the effectiveness of progressive mobilization of level I with Mozart's music therapy on non-invasive hemodynamic status changes in patients with head injury with decreased awareness.

**Methods:** This was a quasi-experimental study with pretest-posttest design. There were 34 samples selected using consecutive sampling, which 17 samples assigned in a group of progressive mobilization and group of music therapy. Paired t-test and Wilcoxon test were used for paired group, and Independent t-test and Mann-Whitney test for unpaired group.

**Results:** Progressive mobilization of level I had significant effect on changes in systolic blood pressure (p = 0.0001), diastolic blood pressure (p = 0.002) and MAP (p = 0.019), and no significant effect on heart rate (p = 0.155), respiration (p = 0.895) and oxygen saturation (p = 0.248). Mozart's music therapy had a significant effect on changes in systolic blood pressure (p = 0.0001), diastolic blood pressure (p = 0.0001), diastolic blood pressure (p = 0.0001), respiration (p= 0.032) and oxygen saturation (p = 0.008), but no effect on MAP (p = 0.561). There was a significant difference between the two interventions in the systolic blood pressure and heart rate variables (p <0.05), while the diastolic blood pressure, MAP, respiration and oxygen saturation variables did not show a difference (p> 0.05).

**Conclusion:** The Mozart's music therapy is more effective on non-invasive hemodynamic status changes in patients with head injury with decreased consciousness compared with progressive mobilization of level I.

**Keywords:** head injuries; hemodynamics; progressive mobilization; Mozart music

INTRODUCTION

The brain is an organ that is vital to all activities and functions of the body, because in the brain there are various control centers such as physical control, intellectual, emotional and skill (Rahmanti & Putri, 2016). A head injury is any injury that results in trauma and problem in the nervous system in the brain (Lumandung, Siwu, & Mallo, 2014). The main cause a serious head injury is a traffic accident. The death rate from traffic accidents in the world in 2013 reached 1.2 million and injured more than 30 million per
year, and 50% of them suffered from head injuries. In Indonesia, based on data from the Indonesian National Police (POLRI) in 2013, there were 80 people per day or 3 people per hour died on the highway due to traffic accidents with head injuries (Lumandung et al., 2016).

Generally, patients with head injury with a decreased awareness will experience increased blood pressure and intracranial pressure (ICP) accompanied by a decrease in pulse and respiratory frequency. The brain is located inside the skull, the increase in ICP will disrupt blood flow to the brain and result in ischemic cerebral (Rihiantoro, Nurachmah, & Hariyati, 2008). ICP monitoring is an effort to prevent and control the improvement of ICT and also maintain cerebral perfusion pressure (CPP). Hemodynamic status is an important component in ICP monitoring as it affects oxygen delivery function and involves the functioning of the heart as a blood pump throughout the body especially to the brain (Leksana, 2011).

Hemodynamic monitoring is central to critical client care. Hemodynamic status is defined as examination of the physical aspects of the blood circulation, including cardiac function and peripheral vascular physiological characteristics (Johnson & Meyenburg, 2009). The recovery of hemodynamic status of head injury patients can be done through nursing interventions by providing stimuli both sensory and motor stimuli. Music therapy is one form of auditory sensory stimulus that will provide stimulation of the nervous system to create stability of the status of hemodynamics that affects the improvement of cerebral tissue perfusion (Rihiantoro et al., 2008). The therapy with instrumental healing sound music performed for 90 minutes is an estimated time to have a meaningful effect, as in previous studies showed that 90-minute time listening to soft music had the same therapeutic effect as using a 10-milligram Valium tranquilizer (Rihiantoro et al., 2008; Thaut et al., 2007). The use of Rhythmic Auditory Stimulation (RAS) is an effective use of therapy compared to the use of methods that only use physical exercise without stimulant (Thaut et al., 2007).

In addition, the sensory stimulus to support the acceleration of recovery in head injury with decreased awareness can also be given a motor stimulus by providing physical exercise in the form of mobilization. The American Association of Critical Care Nurses (AACN) introduces progressive interventions that consist of 5 levels; Head of Bed (HOB), passive and active Range of Motion (ROM) drills, lateral rotational therapy, prone position, movement against gravity, the position of the feet hanging, standing and walking. Continuous Lateral Rotation Therapy (CLRT) and Head Of Bed (HOB) are giving a 30° semi-fowler position and 30° left and right tilts (Vollman, 2010).

Mobilization contributes to the value of oxygen saturation in emergency patients. Progressive mobilization of level I can maintain the value of oxygen saturation in critical patients with installed ventilator (Thaut et al., 2007). The process of blood circulation is also influenced by body position and body gravity changes so that perfusion, diffusion, distribution of blood flow and oxygen can flow throughout the body (Thaut et al., 2007; Vollman, 2010). Mobilization is expected to increase oxygen transport. The mobilization in ICU can be seen as an early rehabilitation process to maintain muscle strength and prevent poor changes in cardiovascular response, it is expected to accelerate the ventilator weaning process and shorten the length of stay in ICU (Rahmanti & Putri, 2016).

However, both progressive mobilization and music therapy are still rarely implemented, which may affect the length of stay of patients in ICU. In many studies, both sensory stimuli in the form of music therapy and motor stimuli in the form of progressive mobilization of level I both yielded a good non-invasive hemodynamic response status to accelerate the recovery period of head injury patients. However, lack of studies compares the effect of the two. Thus, this study aimed to examine the effectiveness of progressive
mobilization of level I with music therapy on non-invasive hemodynamic status changes in patients with head injury with decreased awareness in the ICU.

METHODS

Study design
This was a quasi-experimental study with pretest-posttest design.

Setting
This research was conducted in the intensive care unit of the General Hospital of Prof. Dr. Margono Soekarjo Purwokerto from 24 January to 24 February 2017.

Sample
The target population in this study was patients with head injury with decreased awareness in the intensive care unit of the General Hospital of Prof. Dr. Margono Soekarjo Purwokerto from December 2016 until January 2017, which amounted to 78 people. Of the total population, 34 samples were selected using consecutive sampling, which 17 samples assigned in a group of progressive mobilization and group of music therapy. The inclusion criteria of the sample were head injury patients with awareness level or GCS <12, MAP> 55 mmHg and <140 mmHg, systolic blood pressure 90-180 mmHg, and oxygen saturation > 90%, and aged ≥15 years.

Intervention
The intervention was conducted by three research assistants. The inclusion criteria of the research assistant were an ICU nurse practitioner with minimal education of diploma 3 degree in nursing, having experience working in the ICU for at least 2 years. The research assistants have been given a training and explanation from the researchers about the purpose and the procedures of the study prior to direct intervention. Those research assistants were assured to have complete understanding about the intervention stages, both in the intervention of mobilization and music therapy.

Progressive mobilization level I in the intervention group 1 was performed every 2 hours for 3 consecutive days based on previous study, and music therapy in the intervention group 2 was performed with a 60-80 beat size and a sound power of 50-70 hertz for 90 minutes per day which was divided into 3 intervention times, namely in the morning, noon and afternoon, according to previous study. Each time was conducted in 30 minutes. The type of the music was Mozart’s music.

Data collection
The research assistants explained the research procedure and provided the consent form to the respondents and their family. The research assistants filled out the assessment and observation sheet covering the respondent’s characteristics of name, age, medical diagnostic type, Glasgow Coma Scale (GCS), and non-invasive hemodynamic status before and after intervention.

Instrument
The observation sheet was used to describe the respondent’s characteristic data (age, sex, medical diagnosis, GCS) and non-invasive hemodynamic status (blood pressure, MAP, heart rate, respiratory rate and oxygen saturation). The non-invasive hemodynamic status was observed from bedside monitor.

Ethical consideration
The ethical approval of the study was obtained from the research ethics committee of Poltekkes Kemenkes Semarang with approval number: 281 / KEPK / Poltekkes-smg / EC/2016, which stated that the research met the requirements. Prior to the research, respondents were given informed consent by providing information about the purpose, benefits and research procedures.

Data analysis
Paired t-test and Wilcoxon test were used for paired group, and Independent t-test and Mann-Whitney test for unpaired group.
RESULTS

Table 1 shows that the average age of respondents in the progressive mobilization group was 36.41 years and in the music therapy group was 35.76 years. The majority of respondents were male and having medical diagnosis of post craniotomy SDH. The mean of GCS in the progressive mobilization group was 8 and in the music therapy group was 9.12. The Levene’s test showed there was no significant difference of the characteristics of respondents between the two groups with p-value >0.05.

Table 1 Characteristics of respondents based on age, gender, medical diagnosis, and Glasgow Coma Scale (GCS) (n=34)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Progressive Mobilization group</th>
<th>Music therapy group</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Mean ± SD)</td>
<td>36.41 ± 11.58</td>
<td>35.76 ± 11.09</td>
<td>0.272</td>
</tr>
<tr>
<td>Gender [n(%)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10 (58.8)</td>
<td>10 (58.8)</td>
<td>1.000</td>
</tr>
<tr>
<td>Female</td>
<td>7 (41.2)</td>
<td>7 (41.2)</td>
<td></td>
</tr>
<tr>
<td>Medical diagnosis [n(%)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDH</td>
<td>1 (5.9)</td>
<td>2 (11.8)</td>
<td></td>
</tr>
<tr>
<td>SDH</td>
<td>2 (11.8)</td>
<td>3 (17.6)</td>
<td></td>
</tr>
<tr>
<td>ICH</td>
<td>3 (17.6)</td>
<td>1 (5.9)</td>
<td></td>
</tr>
<tr>
<td>Post Craniotomy EDH</td>
<td>3 (17.6)</td>
<td>2 (11.8)</td>
<td>0.423</td>
</tr>
<tr>
<td>Post Craniotomy SDH</td>
<td>4 (23.5)</td>
<td>4 (23.5)</td>
<td></td>
</tr>
<tr>
<td>Post Craniotomy ICH</td>
<td>2 (11.8)</td>
<td>3 (17.6)</td>
<td></td>
</tr>
<tr>
<td>Post Craniotomy SAH</td>
<td>2 (11.8)</td>
<td>2 (11.8)</td>
<td></td>
</tr>
<tr>
<td>GCS (Mean ± SD)</td>
<td>8.00 ± 1.80</td>
<td>9.12 ± 1.49</td>
<td>0.817</td>
</tr>
</tbody>
</table>

Table 2 The homogeneity of non-invasive hemodynamic status before and after intervention in the progressive mobilization group and music therapy group (n=34)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Pre (Mean ± SD)</th>
<th>p-value</th>
<th>Post (Mean ± SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic blood pressure</td>
<td>Mobilization</td>
<td>149.59 ± 9.88</td>
<td>0.092</td>
<td>128.88 ± 13.17</td>
<td>0.897</td>
</tr>
<tr>
<td></td>
<td>Music</td>
<td>158.06 ± 14.41</td>
<td></td>
<td>140.06 ± 13.89</td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td>Mobilization</td>
<td>86.24 ± 12.43</td>
<td>0.246</td>
<td>76.35 ± 7.48</td>
<td>0.327</td>
</tr>
<tr>
<td></td>
<td>Music</td>
<td>90.65 ± 8.57</td>
<td></td>
<td>74.88 ± 10.12</td>
<td></td>
</tr>
<tr>
<td>MAP</td>
<td>Mobilization</td>
<td>98.41 ± 12.71</td>
<td>0.072</td>
<td>92.06 ± 7.59</td>
<td>0.376</td>
</tr>
<tr>
<td></td>
<td>Music</td>
<td>100.12 ± 17.39</td>
<td></td>
<td>98.00 ± 10.68</td>
<td></td>
</tr>
<tr>
<td>Heart Rate</td>
<td>Mobilization</td>
<td>96.88 ± 27.76</td>
<td>0.761</td>
<td>90.47 ± 12.02</td>
<td>0.889</td>
</tr>
<tr>
<td></td>
<td>Music</td>
<td>89.88 ± 27.37</td>
<td></td>
<td>80.71 ± 14.16</td>
<td></td>
</tr>
<tr>
<td>Respiration</td>
<td>Mobilization</td>
<td>21.35 ± 7.71</td>
<td>0.077</td>
<td>21.59 ± 3.66</td>
<td>0.863</td>
</tr>
<tr>
<td></td>
<td>Music</td>
<td>18.28 ± 5.22</td>
<td></td>
<td>21.24 ± 2.41</td>
<td></td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>Mobilization</td>
<td>96.76 ± 3.11</td>
<td>0.738</td>
<td>98.06 ± 3.03</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Music</td>
<td>96.00 ± 2.87</td>
<td></td>
<td>99.24 ± 1.39</td>
<td></td>
</tr>
</tbody>
</table>

The Levene’s test results showed in the table 2 shows that the status of hemodynamic during pretest was homogeneous between the group of mobilization and music group. While after intervention the status of hemodynamic during pretest was also homogeneous, except oxygen saturation (p=0.025).
### Table 3 Effect of progressive mobilization level I on non-invasive hemodynamic status (n=17)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre (Mean ± SD)</th>
<th>Post (Mean ± SD)</th>
<th>Pre Median (Min-Max)</th>
<th>Post Median (Min-Max)</th>
<th>T</th>
<th>Z</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paired t-test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP</td>
<td>149.59±9.88</td>
<td>128.88±13.17</td>
<td>-</td>
<td>-</td>
<td>8.549</td>
<td>-</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>96.88±27.76</td>
<td>90.47±12.02</td>
<td>-</td>
<td>-</td>
<td>1.494</td>
<td>-</td>
<td>0.155</td>
</tr>
<tr>
<td>Respiration</td>
<td>21.35±7.71</td>
<td>21.59±3.66</td>
<td>-</td>
<td>0.133</td>
<td>-</td>
<td>0.895</td>
<td></td>
</tr>
<tr>
<td><strong>Wilcoxon test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic BP</td>
<td>-</td>
<td>-</td>
<td>89(55-102)</td>
<td>79(61-88)</td>
<td>-3.080</td>
<td>-</td>
<td>0.002*</td>
</tr>
<tr>
<td>MAP</td>
<td>-</td>
<td>-</td>
<td>96(84-138)</td>
<td>91(82-113)</td>
<td>-0.002</td>
<td>-</td>
<td>0.919*</td>
</tr>
<tr>
<td>Oxygen Saturation</td>
<td>-</td>
<td>-</td>
<td>98(91-100)</td>
<td>100(91-100)</td>
<td>-2.348</td>
<td>-</td>
<td>0.248</td>
</tr>
</tbody>
</table>

### Table 4 Effect of Mozart’s music therapy on non-invasive hemodynamic status (n=17)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre (Mean ± SD)</th>
<th>Post (Mean ± SD)</th>
<th>Pre Median (Min-Max)</th>
<th>Post Median (Min-Max)</th>
<th>T</th>
<th>Z</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paired t-test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP</td>
<td>90.65±8.57</td>
<td>74.88±10.12</td>
<td>-</td>
<td>-</td>
<td>5.364</td>
<td>-</td>
<td>0.000*</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>100.12±17.39</td>
<td>98.00±10.68</td>
<td>-</td>
<td>-</td>
<td>0.594</td>
<td>-</td>
<td>0.561</td>
</tr>
<tr>
<td>Respiration</td>
<td>18.28±5.22</td>
<td>21.24±2.41</td>
<td>-</td>
<td>0.279</td>
<td>-</td>
<td>0.032*</td>
<td></td>
</tr>
<tr>
<td><strong>Wilcoxon test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic BP</td>
<td>-</td>
<td>-</td>
<td>89(55-102)</td>
<td>79(61-88)</td>
<td>-3.481</td>
<td>-</td>
<td>0.000*</td>
</tr>
<tr>
<td>MAP</td>
<td>-</td>
<td>-</td>
<td>96(84-138)</td>
<td>91(82-113)</td>
<td>-0.923</td>
<td>-</td>
<td>0.356</td>
</tr>
<tr>
<td>Oxygen Saturation</td>
<td>-</td>
<td>-</td>
<td>98(91-100)</td>
<td>100(91-100)</td>
<td>-2.646</td>
<td>-</td>
<td>0.008*</td>
</tr>
</tbody>
</table>

### Table 5 Difference of non-invasive hemodynamic status between the group of progressive mobilization and the group of music therapy (n=34)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Posttest</th>
<th>Mean difference</th>
<th>Median (Min-Max)</th>
<th>t</th>
<th>Z</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent t-test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP</td>
<td>17</td>
<td>Mobilization group</td>
<td>128.88±13.17</td>
<td>11.18</td>
<td>-</td>
<td>2.407</td>
<td>0.022*</td>
</tr>
<tr>
<td>Diastolic BP</td>
<td>17</td>
<td>Mobilization group</td>
<td>76.35±7.48</td>
<td>1.47</td>
<td>-</td>
<td>0.482</td>
<td>0.633</td>
</tr>
<tr>
<td>MAP</td>
<td>17</td>
<td>Mobilization group</td>
<td>74.88±10.12</td>
<td>-</td>
<td>1.870</td>
<td>-</td>
<td>0.071</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>17</td>
<td>Mobilization group</td>
<td>90.47±12.02</td>
<td>9.76</td>
<td>-</td>
<td>2.168</td>
<td>0.038*</td>
</tr>
<tr>
<td><strong>Mann Whitney</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiration</td>
<td>17</td>
<td>Mobilization group</td>
<td>-</td>
<td>-</td>
<td>23(15-51)</td>
<td>-</td>
<td>-0.122</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>17</td>
<td>Mobilization group</td>
<td>-</td>
<td>-</td>
<td>100(91-100)</td>
<td>-</td>
<td>-1.163</td>
</tr>
</tbody>
</table>

Belitung Nursing Journal, Volume 4, Issue 2, March-April 2018

139
Table 3 shows that there was a significant effect of progressive mobilization level I on systolic blood pressure (p=0.001), diastolic blood pressure (p=0.002) and MAP (p=0.019). There was no significant effect on heart rate (p=0.155), respiration (0.895), and oxygen saturation (p=0.248).

Table 4 shows that there was a significant effect of Mozart’s music therapy on systolic blood pressure (p=0.000), diastolic blood pressure (p=0.000), respiration (p=0.032), and oxygen saturation (p=0.008). There was no significant on heart rate (p=0.561) and MAP (p=0.356).

Table 5 shows that there were significant differences in systolic blood pressure (p=0.022) and heart rate (p=0.038) between the group of progressive mobilization and the group of Mozart’s music therapy.

**DISCUSSION**

**Effect of Progressive Mobilization Level I on Hemodynamic Status Changes**

The result of paired sample t-test shows that there was significant decrease of systolic and diastolic blood pressure (toward stable or normal) after given the progressive mobilization level I.

The results of this study are in line with previous study which involved 21 patients with cerebral injury with the provision of a position of 30° head of bed position and the provision of right and left tilted position, which indicated that there was a change in blood pressure after given progressive mobilization intervention (Ningtyas, Pujiastuti, & Indrivawati, 2017; Olviani, 2015). Similar with another study indicated that there was an influence of giving lateral position on blood pressure based on MAP calculation in patients (Rifai, 2015). In addition, the position of the 30° head up elevation was greatly effective in lowering intracranial pressure without decreasing the CPP value or disturbing the perfusion of oxygen to the cerebral (Olviani, 2015).

On the other hand, this study also revealed that there was a significant difference of MAP before and after intervention with the difference of average decrease of 6.35 mmHg. Lateral position affects the increase in MAP indicating that indirectly the state of cardiac output is increased and hemodynamic is improved, so that it can be one choice of nursing actions to improve MAP in patients in intensive care. MAP describes the average perfusion of systemic blood circulation. It is important to maintain a MAP above 60 mmHg to ensure brain perfusion, coronary artery and renal perfusion (Kurniawan, 2015).

This study showed no difference in heart rate variable after given progressive mobilization intervention of level I. This is in line with previous study indicated that there was no significant effect of pulse monitoring before and after given the progressive mobilization level I (Rahmanti & Putri, 2016). However, the results of this study were also in contrast with study explained that mobilization significantly affects heart rate and blood pressure, and decreases oxygen saturation (Olviani, 2015).

Critical patients usually have a weak heartbeat rhythm, unstable breathing or low cardiovascular reception, so mobilization is better intervention for them rather than being left in a static position. The cardiovascular system attempts to regulate in two ways namely by replacing the plasma volume or with the inner ear as a vestibular response that affects the cardiovascular system during position change (Vollman, 2010).

This study also revealed that there was no significant difference in respiration before and after given the level I progressive mobilization. This results were not in line with previous study indicated that there was a significant difference in respiration after given mobilization in patients with cerebral injury (Rifai, 2015). However, it is consistent with the theory stated that early mobilization in the cardiovascular system increases cardiac output, improves myocardial contraction, strengthens heart muscle, lowers blood...
pressure, and improves venous return; while early mobilization in the respiratory system increases the frequency and depth of respiration and ventilation alveolar, and lowers respiratory work (Rifai, 2015).

Progressive mobilization in this study also had no significant effect on oxygen saturation, which is similar with previous study revealed that the implementation of progressive mobilization level I has no effect on oxygen saturation in critical patients. This is due to the patient's hemodynamic instability that can be a barrier to mobilization, so that mobilization intervention is sometimes discontinued and then re-implemented once patient condition is stable (Olviani, 2015).

Effect of Mozart's Music Therapy on Hemodynamic Status Changes
Findings of this study indicated that Mozart’s music therapy had a significant effect on systolic and diastolic blood pressure. These results were in line with previous study explained that there is a change in blood pressure both systolic and diastolic in hypertensive patients after given classical music therapy (Suherly & Meikawati, 2012).

The music therapy in both coma and post-surgery patients showed a positive effect on hemodynamic status, ECG and respiration (Novita, 2012). It is said that a person who listens to the appropriate music then his/her pulse and blood pressure can be decreased and stabilized, brain waves slow down, and brain muscles become relaxed (Kurniawan, 2015). This is supported by previous research concluded that music therapy may decrease hemodynamic status (blood pressure, pulse and respiration) in comatose patients (Rhiantoro et al., 2008).

Music is generated from stimuli whose waves are transformed through the ossicles in the middle ear and through cochlear fluid to the auditory nerve as well as to the autonomic nerve area and then the auditory nerve delivers these signals to the auditory cortex in the temporal lobes and subsequently stimulates the release of the endorphin hormone. This hormone has a relaxing effect on the body that can decrease muscle tension, increase the threshold of consciousness, and stabilize hemodynamics by decreasing heart rate, breathing and blood pressure (Novita, 2012).

However, the music therapy had no effect on Mean Arterial Pressure (MAP), which was in contrast with previous study explained that there was a significant effect of music therapy on MAP, heart and breath frequency, all of which show a decrease in mean (Rhiantoro et al., 2008). Decreasing indicator of hemodynamic status in head injury patients with decreased awareness will help the stabilization of patient’s hemodynamics as well as assist recovery process (Rhiantoro et al., 2008).

In this study, the duration of music therapy intervention was sometimes less than 30 minutes or less than 90 minutes due to the condition of patients sometimes changed drastically to unstable. Giving duration of Mozart's music therapy of less than 90 minutes is incompatible according to previous studies indicated that the 90 minutes listening to soft music had the same therapeutic effect as using a 10-milligram Valium sedative (Thaut et al., 2007).

On the other hand, Mozart’s music therapy showed no significant effect on heart rate. According to previous study, reading the Quran can be compared with the rhythm of music even has a spiritual value that is much greater than music. The Qur’an-murrotal therapy affects the value of GCS, but does not affect systolic and diastolic blood pressure, respiratory and pulmonary frequency (Widaryati, 2016). However, the music stimulus will give a message to the hypothalamus, which further reduces the neuropeptide secretion and then proceeds to the autonomic nervous system. The decreased secretion neuropeptide causes the parasympathetic nervous system to influence over the sympathetic nervous system resulting in a relaxed condition. This condition also decrease catecholamine release by the adrenal
medulla resulting in decreased frequency of heart rate, blood pressure, blood vessel obstruction and consumption of oxygen by the body (Hegde, 2014).

Findings of this study also revealed that there was no significant effect of Mozart’s music therapy on respiration with p-value = 0.032, with an average increase of 2.96 x/ min. This finding was in contrast to previous research concluded that there was a decrease in mean on the patient's breathing frequency after music therapy (Rhiantoro et al., 2008). Music is considered affecting respiratory breathing rhythmic.

In contrast, music therapy had a significant effect on oxygen saturation. The music proved to be effective in stabilizing oxygen saturation levels and there were no negative effects on apnea and bradycardia. Therefore, one of the efforts to reduce the effects of stress due to noise or excessive environmental stimulation is to provide music therapy, thereby reducing stress on the head injury patients in the ICU, which ultimately will reduce the need for oxygen so that blood oxygen levels increase (Rahmadevita, Rustina, & Syahreni, 2013).

When the sound of music received is a calming and regular sound repeatedly like Mozart's classical music, then the sound of music will impulse the hypothalamus to respond to the adrenal medulla glands to suppress the release of the hormone epinephrine and norepinephrine or the release of catecholamine into the blood vessels to decrease. As a result, the concentration of catecholamine in the plasma becomes low, so the heart rate and oxygen consumption decrease and the blood oxygen level increases, which eventually makes the respiratory frequency to be slow (Kirby, Oliva, & Sahler, 2010).

Differences of Non-Invasive Hemodynamic Status in the Group of Progressive Mobilization Level I and the Group of Mozart Music Therapy
Statistical analysis using Independent t-test showed that progressive mobilization of level I and Mozart music therapy had a significant difference in giving an influence on systolic blood pressure. The progressive mobilization showed a greater effect in decreasing systolic blood pressure compared with the music therapy. Providing a motor stimulus in the form of progressive mobilization can improve perfusion of cerebral tissue in the head injury patients to support the acceleration of recovery (Olviani, 2015), which in line with the results of the previous study explaining that there is a change in blood pressure after the progressive mobilization of level I (Rahmanti & Putri, 2016).

Similar with diastolic blood pressure, findings of this study revealed that progressive mobilization level I and Mozart’s music therapy had no significant difference in decreasing diastolic blood pressure. However, music therapy showed a greater effect in lowering diastolic blood pressure compared with mobilization. This is line with previous studies revealed that progressive mobilization and music therapy had a significant influence on diastolic blood pressure (Olviani, 2015).

On the other hand, there was no significant difference of the effect of both interventions on MAP, but the progressive mobilization showed a greater influence on MAP compared with music therapy. It is in accordance with the results of the previous study, which explains that the lateral position affects the increase in MAP. Studies also suggest that one of the management to decrease ICP is to give semi-fowler position with 15° - 30° to increase venous drainage from the head and may cause a decrease in systemic blood pressure that can be compromised by cerebral perfusion pressure (Kayana, Maliawan, & Kawiyana, 2013).

Mozart’s music therapy and progressive mobilization had no significant difference on heart rate and respiration rate. However, Mozart's music therapy showed a greater influence than the progressive mobilization. This occurs because the progressive mobilization of level I implemented in this study was head of bed 15° - 30° and tilted the
client right and left without taking ROM action. Although ROM has benefits but it was not performed because it is a contraindication for head injury patients as it may lead to an increase in ICP (Darmayanti & Oktamianti, 2014). So that the result of progressive mobilization level I did not significantly affect respiration.

Additionally, finding of this study showed no significant difference of effect on oxygen saturation in both groups. But Mozart's music therapy had a greater effect in increasing oxygen saturation compared with progressive mobilization. This result can be influenced by airway obstruction with the accumulation of secretion. Thus, the action of suction is performed. Previous study said there was an effect of ETT mucus sucking action on oxygen saturation level (Kitong, Mulyadi, & Malara, 2014).

The results of this study could be a positive input in clinics or hospitals, which is related to the impact of Mozart's music therapy in reducing systolic and diastolic blood pressure, increasing respiration and oxygen saturation in patients with head injury with critical condition in intensive care room in addition to medical therapy to shorten the length of stay in the ICU.

The limitation of this research is that the researcher was less selective in determining the respondent's criteria in the research, for instance, the dismissal of intervention if the respondent hemodynamic status suddenly changed drastically towards the abnormal then re-implemented when the hemodynamic status of the respondent was stable, which this type of patients should be excluded in this study.

CONCLUSION

The non-invasive hemodynamic status in the progressive mobilization group showed there were significant differences in systolic blood pressure, diastolic blood pressure and MAP before and after given intervention; while no difference in heart rate, respiration and oxygen saturation. While hemodynamic status in the Mozart music therapy showed a significant difference in systolic blood pressure, diastolic blood pressure, respiration and oxygen saturation before and after intervention; and no significant difference on MAP and heart rate. The Mozart's music therapy is more effective on non-invasive hemodynamic changes compared with the progressive mobilization of Level I.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

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EFFECT OF POSITIONING ON BLEEDING COMPLICATION AND LOW BACK PAIN AFTER DIAGNOSTIC CORONARY ANGIOGRAPHY IN PATIENTS WITH CORONARY HEART DISEASE IN AN INTEGRATED HEART CARE CENTER IN INDONESIA

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Abstract
Background: Coronary angiography can cause complications of arterial and subcutaneous bleeding (hematoma) and back pain. Changing the position of the patient (positioning) in bed can reduce the pain post-diagnostic catheterization complications.

Objective: This study was to examine the effect of positioning on bleeding complication and low back pain after diagnostic coronary angiography in patients with coronary heart disease patient in the Integrated Heart Care Center in Indonesia.

Methods: This study was a true-experimental study with randomized posttest-only control group design. Thirty respondents were randomly selected using simple random sampling, which 15 respondents were randomly assigned in the experiment group and control group. The experiment group was given a positioning with 15°, 30°, 45° head-of-bed elevation in left and right lateral position. An arc tool was used to measure the height of head of bed elevation, a measuring cup to measure arterial bleeding using, a perforated transparent plastic with 5 cm diameter to measure subcutaneous bleeding (hematoma), and Numeric Pain Rating Scale to measure low back pain. Data were analyzed using Kolmogorov-Smirnov and Repeated Measured ANOVA.

Results: Findings showed that positioning had no effect on arterial hemorrhage ($\rho=1.000$) and subcutaneous bleeding (hematoma) ($\rho=0.999$). Repeated ANOVA test results revealed that positioning had a significant effect on low back pain ($\rho=0.017$).

Conclusion: There was no significant effect of positioning on the occurrence of arterial and subcutaneous bleeding (hematoma), but there was a significant effect in reducing low back pain.

Keywords: positioning; arterial bleeding; subcutaneous bleeding; back pain

INTRODUCTION

Coronary Heart Disease (CHD) is one of the most common cardiovascular diseases (43% of total cardiovascular disease) and it is considered as the highest cause of death globally. World Health Organization (WHO) reports that the mortality rate of CHD in the world reached 7.4 million annually and continues to increase (WHO, 2012). CHD is the leading cause of death in developed and developing countries, and half of the world's population now living in the countries in Asia. The proportion of deaths from CHD in Southeast Asian countries including Thailand 60 / 100,000 population per year, Malaysia
According to data and information center of the Ministry of Health, the province of Central Java ranks third for CHD cases with number of patients based on medical diagnosis of 120,447 people (0.5%) and also based on doctor / symptom diagnosis of 337,252 persons (1.4%) (MOH, 2014). Cardiovascular invasive diagnostics is an act of diagnostic testing to determine invasive diagnosis of heart and blood vessel abnormalities. It is called invasive because it inserts a small tube (catheter) into the heart through a vein or arterial vessel, whereas non-cardiovascular surgical intervention is an action taken to treat heart and blood vessel abnormalities using methods outside surgery (RSCM, 2013).

The management of cardiology is done by developing various techniques and procedures with percutaneous methods. Generally, percutaneous actions performed on patients with Coronary Artery Disease (CAD) are Diagnostic Coronary Angiography (DCA) and Percutaneous Coronary Intervention (PCI) (Woods, 2010). DCA is a more accurate assessment technique for evaluating hemodynamic status compared with non-invasive testing. This action is a standard examination for diagnosing coronary heart disease and is used as the primary method to describe the anatomy of coronary arteries (spot, stiffness, morphology of lesions, coronary blood flow, and collateral vessels) (Oladje, 2016). Coronary angiography is a diagnostic act, and PCI is intervention action. Coronary angiography can lead to complications of bleeding and hematoma as well as patients' discomfort (Bonow, Mann, Zipes, & Libby, 2011).

The incidence of vascular complications varies in number. A previous study indicated that 8.9% of a total sample of 90 patients experiences a hematoma incidence (Sinaga, Nurachmah, & Gayatri, 2012), supported by another study indicated that of 40 respondents, 5.5% of them had local vascular complications and 11.1% had femoral neuropathy (Manik, 2015).

Nursing actions to minimize vascular complications after coronary angiography are manual suppression for 20-30 minutes after femoral sheath removal, measuring and evaluating vital signs every 15 minutes in the first hour and every hour until the third hour; palpating the pulse in the blood vessel area of catheter access, peripheral temperature, skin color and capillary refill time, and patients are recommend bed rest 2 - 4 hours on PCI / PCA (Sinaga et al., 2012).

Post-angiographic patients require prolonged bed rest, which can cause back pain, orthostatic hypotension, elimination problems, comfort disorders, etc (Panggabean HA, 2011). Studies state that the greatest inconvenience of hospital care for patients requiring a coronary diagnostic and / or intervention procedure is the length of time they are required to lie down after femoral arterial sheath release (Armendaris, Azzolin, Alves, Ritter, & Moraes, 2008; Potter & Perry, 2005). Low Back Pain (LBP) is a frequent complaint due to immobilization.

Thus, positioning is a self-directed nursing action that is deliberately done to provide the body's position in improving physical or psychological wellbeing or comfort (Panggabean HA, 2011). Study states that there is a difference of a significant degree of comfort between positioning and non-positioning patients (p value <0.05), which patients who do not change positions suffering more back pain (Armendaris et al., 2008). This is supported by other studies indicated that change the patient's position in bed or early mobilization can reduce pain without a statistically significant increase in the incidence of post-diagnostic catheterization complications (Kusumantoro, 2013). The results of previous studies found that postpositional changes after angiography did not increase the risk of vascular complications, and might make patients feel comfortable (Vlasic, 2004). Therefore, the
aim of this study was to examine the effect of positioning on bleeding complication and low back pain after diagnostic coronary angiography in patients with coronary heart disease patient in the Integrated Heart Care Center in the Hospital of Dr. Moewardi, Indonesia.

METHODS

Study design
This study was a true-experimental study with randomized posttest-only control group design.

Setting
This study was conducted from January to February 2017 at the Integrated Heart Service Installation of Dr. Moewardi General Hospital.

Research subjects
The target population in this study was all patients with coronary heart disease who performed a diagnostic coronary angiography (post-femoral arterial sheath removal) at the installation of Integrated Heart Service Installation of the General Hospital of Dr. Moewardi, Surakarta, Central Java, Indonesia. Thirty respondents were randomly selected using simple random sampling, which 15 respondents were randomly assigned in the experiment group and control group.

Intervention
The experiment group was given a positioning with 15°, 30°, 45° head-of-bed elevation in left and right lateral position, and then continued observing arterial bleeding, subcutaneous bleeding (hematoma), and back pain. For pain variable, respondents were given positioning treatment for 6 hours with 6 times the measurement including: posttest 1, posttest 2, posttest 3, posttest 4, posttest 5, and posttest 6. For bleeding complication (arterial and subcutaneous bleeding) variable, respondents were given positioning treatment for 6 hours with 1-time measurement, which was observed at the posttest at end of treatment. The control group was given a 15-degree head-of-bed elevation based on the hospital standard.

Instrument
There were four instruments used, namely: (i) an arc tool to measure the height of head of bed elevation, (ii) a measuring cup to measure arterial bleeding using, (iii) an instrument to measure subcutaneous bleeding (hematoma) using perforated transparent plastic with 5 cm diameter, and (iv) Numeric Pain Rating Scale in Indonesian language to measure low back pain, in which a respondent selects a whole number (0–10 integers) that best reflects the intensity of his/her pain (Maharani, Pramono, & Wahyuni, 2017).

Ethical consideration
Ethical clearance has been published by the Health Research Ethics Committee at Dr. Moewardi with number: 17 / I / HREC / 2017. Informed consent was conducted to the respondents by explaining the purpose, benefits, duration of study, procedures responsibilities of participants, and the confidentiality of the data.

Statistical analysis
Kolmogorov- Smirnov and Repeated ANOVA statistical test was used to measure pain.

RESULTS
Table 1 shows that the majority of respondents in the experiment and control group was in the category of elderly (< 45 years), male and in normal category of BMI. There were no significant differences of the characteristics (age, gender, and BMI) between the two groups, which p-value in each variable was >0.05.
Table 1 Characteristics of respondents based on age, gender, body mass index (BMI) in the experiment and control group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experiment (n=15)</td>
<td>Control (n=15)</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Age (Mean±SD)</td>
<td>(55.33±10.54)</td>
<td>(58.67±13.29)</td>
</tr>
<tr>
<td>Adult 26-45 years</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>Elderly &gt; 45 years</td>
<td>13</td>
<td>86.7</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>0.345 *</td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>80</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>BMI (Mean±SD)</td>
<td>(23.54±3.23)</td>
<td>(23.51±2.64)</td>
</tr>
<tr>
<td>Thin</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Normal</td>
<td>11</td>
<td>73.3</td>
</tr>
<tr>
<td>Overweight</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

*Lavene’s test; Significant ρ > 0.05

Table 2 Arterial and subcutaneous bleeding in the experiment and control group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Group</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Experiment</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Arterial Bleeding</td>
<td>No bleeding</td>
<td>13</td>
<td>86.7</td>
</tr>
<tr>
<td></td>
<td>Minimal bleeding (&lt;100ml)</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Significant bleeding (&gt;100ml)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Subcutaneous bleeding (Hematoma)</td>
<td>No hematoma</td>
<td>10</td>
<td>66.7</td>
</tr>
<tr>
<td></td>
<td>Small hematoma (&lt;5cm)</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Large hematoma (&gt;5cm)</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

*Lavene’s test; Significant ρ > 0.05

Table 2 shows that the percentage of arterial hemorrhage in the experiment group was 86.7% of respondents had no bleeding and 13.3% of minimal bleeding, while the control group was 80% of no bleeding and 20% of minimal bleeding. There was no significant difference in arterial bleeding between the two groups with p=0.345 (>0.05). For subcutaneous bleeding category, the experiment group experienced small hematoma (27.7%) and large hematoma (6.7%); while the control group experienced small hematoma (33%) and large hematoma (13.3%). It was no difference in hematoma between the experiment and control group with p=0.363.

K-S test result as shown in the table 3 shows no significant effect of positioning on arterial bleeding in the experiment and control group with p-value 1.000 (>0.05); while table 4 also shows no significant effect of positioning on subcutaneous bleeding in the two groups with p-value 0.999 (>0.05).
Table 3 Effect of positioning on arterial bleeding in the experiment and control group using K-S test

<table>
<thead>
<tr>
<th>Group</th>
<th>Arterial bleeding</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No bleeding</td>
<td>Minimal bleeding (&lt;100ml)</td>
</tr>
<tr>
<td>Experiment</td>
<td>13</td>
<td>86.7</td>
</tr>
<tr>
<td>Control</td>
<td>12</td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>83.3</td>
</tr>
</tbody>
</table>

*Kolmogorov-Smirnov: Significant ρ < 0.05

Table 4 Effect of positioning on subcutaneous bleeding in the experiment and control group using K-S test

<table>
<thead>
<tr>
<th>Group</th>
<th>Subcutaneous bleeding (Hematoma)</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No hematoma</td>
<td>Small Hematoma (&lt;5cm)</td>
</tr>
<tr>
<td>Experiment</td>
<td>10</td>
<td>66.7</td>
</tr>
<tr>
<td>Control</td>
<td>8</td>
<td>53.3</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>60</td>
</tr>
</tbody>
</table>

*Kolmogorov-Smirnov: Significant ρ < 0.05

Table 5 Differences in low back pain between the experiment and control group

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of measurement of LBP</td>
<td>12.067</td>
<td>2.386</td>
<td>5.056</td>
<td>4.008</td>
<td>0.017*</td>
</tr>
</tbody>
</table>

*Test of Within-Subjects effects; significant ρ < 0.05

Table 6 Analysis of differences of low back pain between the experiment and control group using repeated measure ANOVA

<table>
<thead>
<tr>
<th>Low back pain</th>
<th>Group</th>
<th>Mean±SD</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttest 1</td>
<td>Experiment</td>
<td>2.00± 1.414</td>
<td>0.242</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.73 ± 1.907</td>
<td></td>
</tr>
<tr>
<td>Posttest 2</td>
<td>Experiment</td>
<td>1.33 ± 1.175</td>
<td>0.021*</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.73 ± 1.870</td>
<td></td>
</tr>
<tr>
<td>Posttest 3</td>
<td>Experiment</td>
<td>1.47 ± 1.407</td>
<td>0.025*</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.93 ± 1.944</td>
<td></td>
</tr>
<tr>
<td>Posttest 4</td>
<td>Experiment</td>
<td>0.73 ± 1.033</td>
<td>0.000*</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.93 ± 1.751</td>
<td></td>
</tr>
<tr>
<td>Posttest 5</td>
<td>Experiment</td>
<td>0.40± 2.187</td>
<td>0.000*</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.07 ± 2.083</td>
<td></td>
</tr>
<tr>
<td>Posttest 6</td>
<td>Experiment</td>
<td>0.13 ± 2.326</td>
<td>0.000*</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.13 ± 2.251</td>
<td></td>
</tr>
</tbody>
</table>

*Repeated Measure ANOVA; Significant ρ < 0.05
Analysis of the results of Repeated Measure ANOVA (Test of Within-Subjects effects) test on low back pain showed that F value for factor of "LBP measurement time" was statistically different (F 12.067, 2.386 with ρ <0.05). So, it can be concluded there were significant differences in low back pain between the experiment and control group. The significant difference between the two started from the 2nd hour to 6th hour of intervention with p-value 0.05, thus positioning had a significant effect in reducing low back pain.

DISCUSSION

Effect of positioning on arterial bleeding and hematoma
In this study, post-test observation was done on arterial bleeding and subcutaneous bleeding (hematoma) after giving positioning intervention in the experimental group and noted in the observation sheet. The measurement of arterial bleeding was done using measuring cup, and hematoma was measured using perforated transparent plastic with diameter of 5 cm.

In the positioning procedure during bed rest, the patients were allowed to move freely in bed while the foot attached to the dressing remained straight (May, Schlosser, & Skytte, 2008). The patients might also alter the position between the supine, tilted to the right or left while keeping the bandaged legs straight (Chair, Taylor-Piliae, Lam, & Chan, 2003; Yilmaz, Gurgun, & Dramali, 2007). During the bed rest period, the head of the bed might be raised up to 30 degrees (Reynolds, Waterhouse, & Miller, 2001). Other studies say the bed head can be raised to 45 degrees (Pooler-Lunse, Barkman, & Bock, 1996).

Femoral artery expulsion as catheter access to diagnostic coronary angiography is the cause of injury to the femoral artery. This can lead to complications of local blood vessels (blood vessels accessing the catheter). This complication does not occur due to the mechanism of the body against blood clots if there is blood vessels injury (Heintzen & Strauer, 1998). Previous studies have concluded that there is no significant difference in the incidence of hemorrhage, hematoma and ecchymosis in coronary post-angiographic patients between patients using sand cushions and elastic bandage (Jones & McCutcheon, 2002). Other studies also concluded there was no significant difference in the incidence of vascular complications (hemorrhage and hematoma) between patients who used a 4.5 kg sand pillow, compressive pads, compression device and without resorting to post-femoral sheath removal in patients post-coronary angiography (Lehmann, Ferris, & Heath-Lange, 1997).

Diagnostic angiography investigates the openness of the coronary arteries from various aspects to estimate the percentage of vascular artery blocks. The invasive method of action is performed in patients with Coronary Heart Disease (CHD) undergoing diagnostic coronary angiography through access to blood vessels by stabbing in the femoral artery. Trauma occurs in artery walls, with complications such as hemorrhage, hematoma, and distal embolism that are likely to occur in areas where the catheter is inserted. Vascular complications are one of the most common complications of coronary angiography. However, positioning does not increase vascular complications (Farmanbar, Mohammadiyan, Moghaddamnia, Kazemnejad, & Salari, 2012). Previous studies have also investigated the effect of position changes after coronary angiography. Changing position in bed and using supportive pillows during the early hours after coronary angiography can effectively minimize pain and hemodynamic instability without increasing vascular complications (ρ <0.05) (Chair, Fernandez, Lui, Lopez, & Thompson, 2008).

Similar with the results of this study revealed that positioning does not affect the incidence of vascular complications (arterial and subcutaneous bleeding). Changes in position
every hour has been shown not to increase the incidence of bleeding and hematoma, so it can be applied in patient care unit after coronary angiography after femoral sheath is revoked. Because the change in position every hour is proved to improve the patient's comfort, this will certainly improve the welfare of patients during treatment.

Effect of Positioning on Low Back Pain

Physiologically, normal body is a comfortable body without pain, but pain is the physiological response of our body to a stimulus. Pain is needed for our body's defense mechanisms to prevent wider organ or tissue damage caused by pain stimulation (Guyton & Hall, 2012). Prolonged bed rest causes back muscles weakening and fatigue due to continued pressure to the same muscles continually, whereas muscle fatigue causes muscle spasms and backache (Yilmaz et al., 2007).

Pain receptors respond to hazard stimuli, such as body position. These receptors are unique because they have an increasingly strong response with repetitive stimulation. Back pain can be directly related to a long-term immobilization period. The muscles that contract statically do not get glucose and oxygen from the blood, so must use the existing reserves. The remains of metabolism cannot be transported out but collected in the muscles. This is what causes pain and fatigue in the muscles. This pain and fatigue force to stop static muscle work. In contrast, dynamic muscle work with the right rhythm will have no muscle fatigue. Back pain often occurs in patients after coronary angiography and this is related to immobility and restricted position (Pooler-Lunse et al., 1996). Positioning is very important in the cardiovascular system as it can prevent orthostatic hypotension / postural hypotension (decreased blood pressure that occurs suddenly when position is changed from supine to sitting or upright position), increase work of the heart and prevent thrombus (Perry & Potter, 2005).

Principles in changing position including: the patient is permitted to change position every hour during the bed rest period, the patient's back and lumbar are supported by the pillow, and the patient is instructed to place three fingers over the femoral dressing to provide pressure when the patient being tilted (Chair et al., 2008). Position of semi fowler with 30° or 40° head of the bed is very useful for patients who have heart problems to improve comfort, better ventilation, and relaxation.

While lateral position is that the patient lying on the side of the body with the weight supported by the under shoulder, under hip and the upper knee, the upper leg being flexed at the hip. This position helps to reduce pressure on the coccyx and is very useful for patients who spend time in the supine or fowler position and to maintain posture in this position. The patient is mounted a pillow under the head and neck and also under the upper arm (Kozier, 2008).

Changing position in the bed and reducing the length of bed rest will reduce the patient's back pain, reduce the workload of nursing staff, decrease the length of time for the patient's back massage, decrease analgesic, reduce the length of stay in the hospital so that lower hospitalization costs, and also allow patients to meet self-care needs such as eating, drinking and urination (Chair et al., 2003; Rezaei-Adaryani, Ahmadi, Mohamadi, & Asghari-Jafarabadi, 2009). This is in line with previous research stating that changing position not only reduces back pain in patients but also increases physical and psychological relaxation (Chair et al., 2003).

Changing the position in the bed from flat lying down and sitting is generally associated with decreased stress on the back muscles, while a gradual increase in movement will increase flexibility and reduce back muscle spasms. Given positioning, the body pressure point is not only centered on the back, shoulders and pelvis, so that the circulation of blood to the back muscles will be more smoothly and does not cause the buildup of lactic acid. Therefore, positioning according to the procedure is an additional strategy used to improve patient comfort. Position changes

Belitung Nursing Journal, Volume 4, Issue 2, March-April 2018

151
in patients with coronary angiography have a significant effect every hour starting from supine, right tilt and left tilt (Yilmaz et al., 2007).

The results of previous research indicated that back pain would be worst in line with the length of time of bed rest. Thus, positioning may decrease the intensity of the pain. This is in line with the control group in this study that patients who were not given a change in position tend to experience increased back pain (Chair et al., 2003). The longer the immobilization, the more discomfort the back pain felt by the patient; the faster the positioning is given, the less likely the complaints of back pain will be (Chair et al., 2008).

In nursing service, improving the welfare and health status of the patient is the main objective and focus of quality improvement and quality of nursing care performed on each patient who needs treatment in accordance with the status and condition of the patient's health. Given the influence of positioning research (posture changes and head elevation) on these post-diagnostic coronary angiography complications, the nurses in the setting of this study know that post-diagnostic coronary angiography patients should be given a positioning intervention to reduce discomfort safely. This action is an independent act of the nurse as it focuses on the patient's basic needs of getting comfortable and free of pain.

CONCLUSION

It can be concluded that positioning has no effect on the occurrence of arterial and subcutaneous bleeding (hematoma), while positioning has a significant effect in reducing low back pain. It is expected that positioning can be a guideline in patient care after diagnostic coronary angiography, in addition to the routine care of hospital.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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angiography (PCA) at Installation of hearth and blood vessel of RSUP dr. Kardiari Semarang]. FIKkes, 6 (1).

EXPERIENCE OF BARRIERS TO HYPERTENSION MANAGEMENT IN MINANGKABAU ETHNIC GROUP IN PAYAKUMBUH INDONESIA: A PHENOMENOLOGICAL STUDY

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Abstract

Background: Understanding barriers to hypertension management remains important to reduce the hypertension rate in community. Minangkabau is one of the ethnic groups in West Sumatra Indonesia that has a high proportion of people with hypertension although its management has been implemented.

Objective: This study aims to explore the experiences of barriers to hypertension management in Minangkabau ethnic group in Payakumbuh, Indonesia.

Methods: This was a phenomenological study with twelve respondents selected using purposive sampling. Data were collected using in-depth interview. Colaizzi’s content analysis method was used for data analysis.

Results: Five themes were emerged from the data, namely: (i) lack of self-motivation in the management of hypertension, (ii) disobedience in the management of hypertension, (iii) culture pattern of food intake, (iv) lack of social support, and (v) excessive stress and anxiety.

Conclusions: The barriers to hypertension management in Minangkabau ethnic group are closely related to its culture both in lifestyle and in food intake of the family members and the community. Nurses are expected to always give health education about hypertension and finding the way to control it.

Keywords: barriers, management of hypertension; Minangkabau ethnic group; qualitative

INTRODUCTION

High blood pressure causes one in every eight death, making hypertension the third leading killer in the world (Maulik, 2013). Basic Health Research Indonesia in 2013 reported the prevalence of hypertension in Indonesia based on diagnosed health worker and taking hypertension medicines increased from 7.6% in 2007 to 9.5% in 2013 (MOH, 2013).

The high risk of hypertension and cardiovascular disease in Indonesia between diverse ethnic groups has a close relationship with the pattern of food intake. The prevalence of hypertension of various ethnic groups in Indonesia is 70.7% of Jawa ethnic group, 72.7% of Sunda ethnic group, 60.9% of Betawi ethnic group, 55.6% of Batak ethnic group and 78.6% of Minangkabau ethnic group. The results of this study indicate the Minangkabau ethnic group have a greater proportion of hypertension than other ethnic groups (Sangadji, Wadjir, & Nurhayati, 2013).
Several studies on hypertension indicate an barriers in its management especially related to diet (Gee et al., 2012; Moczygemba, Kennedy, Marks, Goode, & Matzke, 2013; Randy Wexler, Pleister, & David Feldman, 2009). In addition, self-efficacy and barriers to some behavioral changes in hypertensive patients are the result of barriers in quit smoking including stress, habits, addiction, long-term smoking, the fear of weight increases; and barriers in physical activity including acute medical conditions, outdoor temperature, overly busy, overly tired. Low sodium diet barriers: taste, comfort, cost, tradition, do not know how to change diet (Gee et al., 2012; Mansyur, Pavlik, Hyman, Taylor, & Goodrick, 2013; Moczygemba et al., 2013; Randy Wexler et al., 2009).

It is indicated that hypertensive patients have barriers in the management of hypertension, especially for Minangkabau ethnic groups who are difficult in controlling blood pressure because they have a bad diet pattern, most of them cannot avoid the habit of consuming saturated fats. The aim of this study was to explore the experiences of barriers to hypertension management in Minangkabau ethnic groups in Payakumbuh, Indonesia.

**METHODS**

**Study design**

This was a phenomenological study to explore the experience of barriers to hypertension management in Minangkabau ethnic groups in Payakumbuh, Indonesia.

**Setting**

This study was conducted at the Community Health Center of Padang Karambia, Community Health Center of Payolansek, and Community Health Center of Tarok in Payakumbuh, Indonesia from June 2017 until the second week of July 2017.

**Sample**

Twelve participants were selected using purposive sampling, which were considered able to help providing information related to the problem of the study (Denise F. Polit & Beck, 2012). The inclusion criteria in this study were: 1) participants were Minangkabau ethnic groups who lived in Payakumbuh, West Sumatra, Indonesia suffering from hypertension disease for approximately five years without complications of cardiovascular disease, neoplastic, nervous system, and diabetes mellitus, 2) participants were willing to be interviewed and recorded the conversation during the study. In-depth interviews were performed for data collection.

**Ethical consideration**

This study has been approved by the Research Ethics Commission of Health, Faculty of Nursing, University of Sumatra Utara, Indonesia with approval number: 1201/V/SP/2017. Informed consent was performed prior to data collection.

**Data analysis**

In analyzing the research data, researchers used Colaizzi methods (Colaizzi, 1978) with the following stages: 1) reading all protocols to acquire a feeling for them, 2) reviewing each protocol and extract significant statements, 3) spelling out the meaning of each significant statement (formulate meanings), 4) organizing the formulated meanings into clusters of themes, comprise: refer these clusters back to the original protocols to validate them and note discrepancies among or between the various clusters, avoiding the temptation of ignoring data or themes that do not fit, 5) integrating results into an exhaustive description of the phenomenon under study, 6) formulating an exhaustive description of the phenomenon under study in as unequivocal a statement of identification as possible, and 7) asking participants about the findings thus far as a final validating step.

**Trustworthiness**

To ensure the trustworthiness of the study, according to literature, member checking with participants was performed, as literature said that member checking is one of the nest methods to ensure the rigor of the study (D. F. Polit & Beck, 2008), and audit trails was also
RESULTS

Five themes were emerged from the data in Minangkabau ethnic group: 1) lack of self-motivation in the management of hypertension, 2) disobedience in the management of hypertension, 3) culture pattern of food intake of Minangkabau ethnic group, 4) lack of social support in the management of hypertension, and 5) excessive stress and anxiety.

Theme 1. Lack of self-motivation in the management of hypertension

Lack of self-motivation becomes an obstacle for participants in managing hypertension particularly in the cause of lack of willingness in doing physical activity on a regular basis, such as physical health conditions, physical fatigue and lazy exercise. This is explained in the following statements:

"...I feel tired and lethargic, quickly drowsy. My appetite and weight increased since quitting smoking. The morning walk for 2 km just feels tired, so I do not routinely exercise..." (Participant 5).

"...There is an obstacle that my body is fat, so it feels heavy when I take a move or exercise, for example, I join gymnastics sometimes but after a few minutes I stop because my body is too weight to be moved ..."(Participant 9).

The limited time to exercise also leads to a lack of self-motivation of participants in managing hypertension, such as busy with homework and not having spare time to exercise. This is explained in the following statements:

"...I am busy since in the morning with homework, from preparing breakfast for the kids, and cleaning the house to help my husband in the garden, so I do not have time to exercise..." (Participant 1).

"...The obstacle is a time, sometimes a lot of work to do, so I cannot exercise" (Participant 5).

Lack of will to quit smoking also causes lack of self-motivation of participants in managing hypertension, such as smoking addiction and inviting friends to smoke again. This is explained in the following statements:

"... The barrier is that an addiction which is difficult to remove because it has been 18 years of smoking although I really want to stop..." (Participant 4).

"...When hanging out with friends, they sometimes offer smoke which difficult for me to refuse, so finally I smoke but for one cigarette only..." (Participant 5).

Theme 2. Disobedience in the management of hypertension

Disobedience in the management of hypertension becomes a barrier for participants in the management of hypertension caused by poor adherence in weight control, such as lack of movement due to overweight, eating frequency, and excessive sleeping after lunch. This is explained in the following statements:

"...Actually, the doctor recommended to exercise and lose weight to reduce my body fat, but to walk alone is difficult, I get tired and I never do exercise .... "(Participant 10).

"...My appetite is increased when the food tastes good, if there is my favorite cuisine of gold fish head curry, I can add up to eat 4-5 times a day, sometimes also dinner which finally to make my weight increased..." (Participant 8).

"... It is difficult for me to change the habit of eating, when I am full then my eyes are so sleepy and finally oversleep. My appetite is always delicious and no problem, but the only problem is my weight..." (Participant 9).

Disobedience to a hypertension diet, such as excessive coffee drinking becomes a barrier for participants in managing hypertension. This is explained in the following statements:

"...The difficult barrier is to reduce the coffee, because my habit since I was a kid get used to drinking coffee as well as my family...." (Participant 6).

"...The obstacles in reducing coffee drinking. From small parents have been accustomed to drink coffee, every day our brothers always drink coffee. At most half a glass but every day in drinking. Because it has become a habit there is less if not drinking coffee..." (Participant 7).

Theme 3. Culture pattern of food intake of Minangkabau ethnic group

Culture pattern of food intake of Minangkabau ethnic group becomes obstacles of the participants in the management of...
hypertension, such as the habit of eating too much salty and high fat. The participants said:

“...I cannot avoid the salty cuisine; it doesn’t feel tasty if there is a less salt. If Minang people say “lai taraso garamnyo”, it is about 1.5-2 tablespoons of salt per day...” (Participant 3).

“...I like tunjang curry and cancang (fat meat curry), it is so delicious, so I cannot avoid it, and I eat that once a week. I usually buy it and never cooked alone...” (Participant 2).

The participants in this study explained that consuming high-fat foods is the habit of Minangkabau society in terms of food intake. This is explained in the following statements:

“...Constraints are also difficult for me to reduce cooking kalio, which I make with a good beef, chicken, or anchovy with sweet potatoes. Every week I tell my wife to cook kalio for me because I like it very much...” (Participant 6).

“...My doctor told me to reduce eating cancang curry dishes (beef fat curry or greasy meat curry), and I tried once, but it is difficult to do because its taste is so attempting...” (Participant 8).

The habit of serving fatty and salty dishes on traditional occasions and tradition of parents is also a part of the cultural pattern of food intake of Minangkabau ethnic group which become barriers of participants in managing hypertension. The participants said:

“...A habit in the wedding ceremony, whether in a traditional event or a party (baralek), is always providing fatty dishes, such as red curry, white curry, pickle and also rendang, which are special and mandatory menu...” (Participant 12).

“...The habit of cooking too salty is from my parents...” (Participant 2).

Theme 4. Lack of social support in the management of hypertension
Lack of social support in the management of hypertension becomes a barrier for participants in managing hypertension. It is difficult to differentiate between the patient and family members because of financial matter. This is explained in the following statements

“...When I cook and make a dish, I do not make it different between family members to save money. If I separate the dish for family member and a member with hypertension, it is difficult and involve high cost...” (Participant 1).

The habits of family members in consuming fat and too salty foods become barriers for participants in managing hypertension. Participants said:

“...When I cook fried foods for my husband and kids with less salt, they often complain and then finally I add more salt...” (Participant 1).

Additionally, the habit of family members smoking at home also becomes a barrier for participants in managing hypertension. It is explained in the following statement:

“...Because my husband is a smoker, so every day I inhale a cigarette smoke. Sometimes I tell my husband to smoke outside, but still the smoke comes into the house...” (Participant 3).

Theme 5. Excessive stress and anxiety
The excessive stress and anxiety become obstacles for participants in managing hypertension, such as uncontrolled emotions. This is explained in the following statements:

“...I am a teacher, and my students are a lot. Sometimes their naughty behavior makes me feel emotion, and ultimately make me angry. If I am angry, my head feels dizzy too much...” (Participant 5).

Life problems also cause excessive stress for participants. It is explained in the following statements:

“...Maybe a burden of thought, I am the eldest and have two siblings. Since my parents died, I raised them both, but in recent years they do not address each other, so it becomes a burden for me...” (Participant 2).

Financial problems also cause excessive stress and anxiety, like participants said:

“...This is also a burden for me to pay educational payment. Now my mother is a single parent, sometimes her sister helps educational fees, but not every time. Sometimes I feel anxious also thinking about children who are still at school, at least they can finish high school level...” (Participant 11).

DISCUSSION
The results showed that the lack of self-motivation in the management of hypertension becomes a barrier for Minangkabau ethnic group in the management of hypertension. From the results of interviews with participants, lack of self-motivation in the management of hypertension is caused by lack of willingness...
in doing physical activity on a regular basis, limited time to exercise, lack of willingness to control weight and to quit smoking. These results are in line with previous research about the lack of volition and self-discipline often reported as a barrier to engage in physical activity, weight control, and smoking cessation. Other important perceived barriers to physical activity in the limited time and condition of physical health or health problems (Gee et al., 2012).

Non-compliance in the management of hypertension is also an obstacle for Minang people in the management of hypertension, which is caused by disobedience in weight control and non-adherence to a hypertensive diet. Study describes weight loss weighing 10 pounds (0.4536 kg) has been shown to reduce blood pressure or prevent the occurrence of hypertension in obese patients (Daniels & Nicoll, 2011). Of 27% of overweight and obese respondents reported receiving lifestyle suggestions for weight-loss purposes (Daniels & Nicoll, 2011).

In addition, individuals with high blood pressure should limit caffeine to approximately 200 mg daily, which is considered as the best method. Previous study shows that respondents who consumed coffee 1 to 2 cups per day have an increase of the risk of hypertension, which is 4.11 times higher compared with respondents who do not drink coffee. So the habit of drinking coffee increases the risk of hypertension, but it depends on the frequency of daily consumption (Daniels & Nicoll, 2011; Martiani & Lelyana, 2012).

While another study describes the overall adherence rate of hypertensive patients in the treatment run of 79%. Adherence rates in women were lower than those of men (74.7% and 85.7%) (Khan, Shah, & Hameed, 2014). The main reasons for non-compliance in the treatment are side effects and forget to take medication. It is in line with another study on healthy lifestyle behaviors in hypertensive patients, which explained acceptable levels of adherence to healthy lifestyle behaviors, including diet planning and exercise (88.6% and 78.7%) (Baynouna, Neglekerke, Ali, ZeinAlDeen, & Al Ameri, 2014).

The culture of food intake of Minangkabau ethnic group is also a barrier in the management of hypertension, which is caused by the habit of consuming high-fat and too-salty foods, either at home or at the traditional occasions, and the tradition of parents using excessive salt in cooking. Meanwhile, the results of interviews with participants showed that the average of participants use salt more than a tablespoon per day because it has become a tradition and habits of parents who use a lot of salt in cooking and participants also have a habit of eating foods that are too salty because their tongue is accustomed to salty dishes. The results of this study are not in line with the recommendation of the Heart Foundation of Australia for hypertensive patients to reduce their salt intake by less than 4 grams of salt per day (about 1550 mg of salt per day), approximately one teaspoon of salt (Heart Foundation, 2007).

In addition to excessive sodium intake, study also explains that consuming excessive fat can increase the incidence of hypertension, especially in saturated fat intake and cholesterol (Ramayulis, 2013). The results of this study revealed that participants have a habit of eating high-fat foods, such as tunjang curry, red curry (beef and goat), kalio meat, fried eel and cancang curry (beef grease curry or mutton). This is in line with previous study in Padang showed 70.5% of respondents often eat fatty beef, offal, liver, brain and chicken meat;82.1% of respondents have uncontrolled blood pressure, and 56.4% respondents have poor diet pattern (Herwati & Sartika, 2013).

Lack of family support in the management of hypertension is also a constraint for Minangkabau ethnic group in the management of hypertension due to the difficulties in differentiating the way of cooking between patient with hypertension and other family member, which is related to the high cost, habit of family members in consuming high-
fat and too-salty foods, and the habit of family members of smoking inside the house.

Previous study explains that family support is an important factor to obey the rules of life or not. Some participants described that they did not receive support from family members in actively treating their illness and sometimes they realize in treating illness better by doing it on their own by not leaning on the family (Fort et al., 2013). Similar with another study revealed that participants reported disagreement with their family members because of incorrect dietary choices (Gebrezgi, Trepka, & Kidane, 2017). This is in line with the results of this study which is related to the lack of family support, especially disagreements between family members with hypertensive patients in consuming food.

Excessive stress and anxiety are also the barrier in hypertension management due to uncontrolled emotions, life problems and financial problems. Study indicated that hypertension patients experience symptoms of anxiety (56%), stress (20%) and depression (4%) (Kretchy, Owusu-Daaku, & Danquah, 2014). Another study indicated that stress is a major factor contributing to the occurrence of high blood pressure. Work-related stress, domestic life, and finances are all the causes of stress, which is in line with the results of this study revealed that the excessive stress and anxiety are caused by emotional distress in the management of hypertension such as uncontrolled emotions, life problems and financial problems that become a barrier for Minang people in the management of hypertension.

CONCLUSION

Controlling blood pressure to remain normal is not easy. Sometimes successful of treatment of hypertension may not be achieved, which is influenced by healthy lifestyles. The Minangkabau ethnic group in this study have a barrier in controlling blood pressure due to the cultural pattern of food intake with full of salt and high in fat. The role of nurse as educator is needed to always provide counseling to hypertension patients about how to manage hypertension by recommending a healthy lifestyle and the use of drug therapy regularly, and finding another strategy to break the habit of Minangkabau ethnic group.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

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THE COMPARISON OF THE EFFECT OF HONEY AND CHLORHEXIDINE IN PREVENTING VENTILATOR ASSOCIATED PNEUMONIA IN PATIENTS ON MECHANICAL VENTILATION

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Abstract
Background: Ventilator Associated Pneumonia (VAP) is one of the causes of infection in the hospital and the main cause of death due to nosocomial infection. The strategy to prevent VAP is by oral hygiene. Honey may be a good solution for oral hygiene.

Objective: This study aims to compare the effect of the use of 20% honey solution and 0.2% chlorhexidine as oral hygiene on VAP prevention in patients on mechanical ventilation.

Methods: This was a quasi-experimental study with posttest only control group design in an incentive care unit of a general hospital in Indonesia. Thirty respondents were selected using consecutive sampling, which 15 respondents assigned in a 20% honey group and 0.2% chlorhexidine group. Clinical Pulmonary Infection Score (CPIS) was used to measure Ventilator Associated Pneumonia. Data were analyzed using Independent t-test.

Results: The mean of CPIS in the honey group was 3.33 and the chlorhexidine group was 3.53. Independent t-test showed p-value 0.618 (>0.05), which indicated that there was no significant difference of the effect of honey and chlorhexidine on VAP event.

Conclusion: The 20% honey solution has the same effect with 0.2% chlorhexidine in preventing VAP events in patients on mechanical ventilation.

Keywords: 0.2% chlorhexidine; CPIS; honey; oral hygiene; VAP; ventilator

INTRODUCTION

The mechanical ventilator is a substitute for ventilation function for patients with indications of respiratory and other critical illnesses. However, the use of mechanical ventilators may lead to various complications in respiratory, cardiovascular, central nervous system, gastrointestinal, psychological and oral health. Endotracheal and oropharyngeal tubes of critical patients with intubation can be a vector for the migration of pathogenic germs to allow for infection (Morton, Fontaine, Hudak, & Gallo, 2013; Sundana, 2014). Infection due to ventilator or known as Ventilator Associated Pneumonia (VAP) is the second cause of infection in the hospital and the main cause of death due to nosocomial infection. Patients suffering from high-risk critical disease may experience pneumonia due to ventilator, which is defined as nosocomial pneumonia in patients who
have been installed a ventilator for at least 48 hours at the time of diagnosis. The VAP patients are characterized by chest x-ray results suggesting a new (progressive) infiltration or sedentary infiltration including other symptoms such as high fever over 38°C, leukocytosis, new onset of purulent sputum and cough, and a worsening gas trade (Vanhems et al., 2011).

The long-term use of mechanical ventilators is assumed to be one of the important risk factors associated with VAP events. In 2001-2009, in the 11 intensive care units in the hospitals in France found 10.8% of 3,387 patients experienced VAP in the first 9 days calculated in 45,760 days. The prediction of the VAP incidence in the first and second day (<48 hours) is 5.3 and 8.3 events. The study is performed on patients with an average age of 54.3 years with mortality rate of 21.7% (Fatmawati R, 2014).

The VAP incidence rates in Indonesia itself vary. Data at the General Hospital Center in Jakarta area found that there is an increasing trend, which the highest incidence occurred on July 2014 (21.2%) and the lowest on September 2014 (5.53%) (Rosyida, 2011). In the General Hospital of Margono in 2015, the incidence of pneumonia was about 15% (RSUD Margono, 2015).

There have been several risk factors related to VAP incidence such as suction method, age, history of lung disease, diabetes mellitus and smoking, including duration of ventilator use; while study found no significant relationship between age (p = 0.230) suction (p = 0.149), history of lung disease (p = 0.469), history of diabetes (p = 0.107), and smoking (p = 1.000) with the incidence of VAP nosocomial infection, only the duration of ventilator use (p = 0.000) has a significant correlation with VAP infection (Lorente, Lecuona, Jiménez, Mora, & Sierra, 2007).

VAP can be prevented by various strategies, including basic nursing principles such as hand washing, wearing gloves when performing nursing procedures, oral hygiene using an antiseptic solution and mouthwash, applying a mouth moisturizer, and sucking and cleaning the secret (Vanhems et al., 2011).

The antiseptic used to clean the mouth such as chlorhexidine. Study states that oral care with chlorhexidine reduced the risk of VAP development with p value = 0.03. Another study compared the effect of hexadol and chlorhexidine resulted in 1 person (3.33%) exposed VAP in both chlorhexidine and hexadol treatment group.

Several studies have shown that antiseptics for oral hygiene can use honey. Study reveals there is a significant difference in the proportion of stomatitis stages before and after oral hygiene with honey (p = 0.000) and 0.12% chlorhexidine (p = 0.005). The use of honey as a solution for oral hygiene in children with stomatitis can decrease stomatitis stages by 75%, with 21% differences with those who did not get honey (Nurhidayatun, Allenidekania, & E, 2016). The purpose of this study was to compare the effectiveness of honey and 0.2% chlorhexidine as a solution for oral hygiene on ventilator associated pneumonia.

METHODS

Study design
This study was a quasi-experimental study with posttest only control group design.

Setting
The study was conducted from 24 January 2017 to 24 February 2017 in the Incentive Care Unit of the General Hospital of Prof. Dr. Margono Soekadjo, Central Java, Indonesia.

Research subjects
Thirty respondents were selected using consecutive sampling, which 15 respondents assigned in a 20% honey group and 0.2% chlorhexidine group. The inclusion criteria of the sample were patients with ventilator and endotracheal tube intubation (ETT) on the first day, patients who used ventilator for up
to 4 days of treatment, and no previous signs of infection such as temperature (i.e. >38°C). The exclusion criteria were patients with HIV and tracheostomy.

**Intervention**

Oral hygiene performed in both honey and chlorhexidine group was based on the same Standard of Operating Procedure in the hospital. The only difference was the solution used. For the experiment group, oral hygiene used 20% honey produced by Perhutani company that has been standardized by Indonesia, while the control group used 0.2% chlorhexidine. The intervention was conducted by researchers and assisted by four research assistants. Oral hygiene was performed twice daily in every morning and afternoon from the 1st day of using ventilator until the 4th day.

**Instrument**

Clinical Pulmonary Infection Score (CPIS) (Hamid, Pujiastuti, Widigdo, & Saha, 2018) was used to measure Ventilator Associated Pneumonia (VAP) including: body temperature (°C) (score 0 if temperature ≥36.5 and ≤38.4; score 1 if temperature ≥38.4 and ≤38.9; score 2 if temperature ≥39.0 and ≤36.0), leukocytes (per mm3) (score 0 if ≥4,000 and ≤11,000; score 1 if <4000 and >11,000), tracheal secretions (score 0 if no or few secrets; score 1 if having secrets and no purulent; and score 2 if having secrets and purulent), oxygenation (score 0 if PaO2/FiO2 >240 or ARDS; score 2 if PaO2/FiO2 ≤240 and no ARDS), thorax photo (score 0 if no infiltrate; score 1 if diffuse infiltrate; and score 2 if localized infiltrate). All scores are summed, if the score of CPIS is 0-5 then no VAP, and if CPIS score is ≥6-9, then VAP occurs.

While the criteria of oral hygiene were oral mucosa and tongue is pink, moist, wet gums, teeth look clean, and slippery, pink is tongue and not dirty, moist, mucosa and pharynx remain clean.

**Ethical consideration**

This study has been approved by the Ethical Research Committee of Poltekkes Semarang with approval number: 286/KEPK/Poltekkes-Smg/EC/2016

**Statistical analysis**

The statistical analysis was performed using SPSS version 18.0. The respondents’ characteristic was described using frequency and percentage. Independent t-test was used to compare the results of the effect of honey and chlorhexidine on VAP with p-value <0.05 and confidence interval of 95%.

**RESULTS**

Table 1 shows that the majority of respondents in the honey and chlorhexidine group aged 41-60 years. Most of respondents in the honey group were females (30%) and in the chlorhexidine group was males (30%). The type of disease in the chlorhexidine group was heart disease (13.33%) and in the honey group was other diseases (13.33%).

Table 2 shows that the majority of respondents in the honey and chlorhexidine group had a body temperature ranged 36.5-38.4, had secrets with no purulent, leucocytes <4000/>11000, FiO2> 240 / ARDS, and thorax photo showed diffuse infiltrate.

Table 3 shows there was no VAP event in both honey and chlorhexidine group. And Table 4 shows that the mean of CPIS in the honey group was 3.33 and the chlorhexidine group was 3.53. Independent t-test showed p-value 0.618 (>0.05), which indicated that there was no significant difference of the effect of honey and chlorhexidine on VAP event.
Table 1 Characteristics of respondents based on age, gender, and type of disease (n=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Oral Hygiene</th>
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</thead>
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<tr>
<td></td>
<td>Honey n=15</td>
<td>F</td>
<td>%</td>
<td>Mean ±SD</td>
</tr>
<tr>
<td>Age group</td>
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<td>11-20 years</td>
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<td>21-40 years</td>
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<td>41-60 years</td>
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<td>26.67</td>
<td>6</td>
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<td>61-80 years</td>
<td>7.33±0.900</td>
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<td>6.67</td>
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<tr>
<td>Gender</td>
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<td>Type of disease</td>
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<td>Respiration</td>
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<td>Heart</td>
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<td>6.67</td>
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<td>Urination</td>
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<td>10.00</td>
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<td>Digestion</td>
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<td>6.67</td>
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<tr>
<td>Others</td>
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<td>4</td>
<td>13.33</td>
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</tbody>
</table>

Table 2 Frequency distribution of respondents based on CPIS (n=30)

<table>
<thead>
<tr>
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Table 3 Frequency distribution of respondents based on VAP event (n=30)

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<tr>
<td></td>
<td></td>
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<td>F %</td>
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<td>15 50</td>
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Table 4 Effect of honey and chlorhexidine on VAP using Independent t-test (n=30)

<table>
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<th>p</th>
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<td>3.33 ± 0.976</td>
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<td>0.504</td>
<td>0.618</td>
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</table>

**DISCUSSION**

The characteristics of respondents aged ranging from 41-60 years with the number of 14 respondents (46.7%). It is line with the literature states that some adults are susceptible to respiratory system disorders, decreased neurological conditions, acute renal failure, shock, and metabolic syndrome (Hunter, 2006). The other studies state that age over 60 or between 54-79 years is more susceptible to VAP events (Saragih, Amin, Sedono, Pitoyo, & Rumende, 2014). This is associated with the frequency of adult patients who enter ICU because of respiratory system disorder and requiring the assistance of a mechanical ventilator. It can be said that age <60 years or >60 years is equally at risk of VAP.

The results of this study also found that the gender of respondents was equal between men and women (50%). It is different from the other study mentioned more men than women with VAP. On the other hand, majority of the respondents with VAP had a type of disease related to cardiovascular system, which is similar with previous study (Sundana, 2014).

Some of the nosocomial pneumonia occurs after surgery, especially if mechanical ventilation is necessary. Patients with ventilators have 6-12 times higher in the risk of nosocomial pneumonia than non-ventilators patients. The main reason for the use of mechanical ventilator in surgical patients is the type of surgery, while in medical patients the use of ventilator is usually associated with a patient's illness, which is the risk of bacterial nosocomial pneumonia following cardiac and pulmonary surgery (e.g. bypass surgery and lung resection) is 38 times greater than other surgeries (Huraini, 2011).

The process of entry of bacteria in patients with ventilator is when endotracheal tube is attached to the patient. The size of ETT attached to the patient is one third of the respiratory tract, so it is possible for bacteria to enter the open breathing hole. Thus, to avoid it, oral hygiene is needed to minimize the incident of VAP. In this study, there was no significant difference between the effect of 20% honey solution and 0.2% chlorhexidine as oral hygiene on ventilator associated pneumonia in patients with mechanical ventilator seen from the component on Clinical Pulmonary Infection Score with p = 0.618 (> 0.05). Thus, it could be said that 20% honey solution and 0.2% chlorhexidine are equally good in VAP prevention. Studies have shown that honey has a function as an anti-bacterial, but it can also be antifungal and...
antivirus. Honey is able to not only inhibit the growth of rubella virus, herpes virus and three species of leishmania parasite, but also inhibit the growth of dermatophyte fungi, candida albicans, C krusei, C tricinosporon and C glabrata that often attack humans (Huraini, 2011).

The other study revealed that honey in the concentration of 100%, 75%, 50%, and 25% are able to inhibit the growth of bacteria, both gram positive and negative bacteria. The antibacterial activity of honey is dominated by hydrogen peroxide. When the damaged system releases a small amount of glucose and produce gluconic acid and hydrogen peroxide, the honey is then analyzed to have a low pH that may have contributed to their antibacterial activity, because low pH honey inhibits the presence and growth of microorganisms (Krishnasree & Ukkuru, 2015).

On the other hand, studies state that chlorhexidine has the ability to inhibit the formation of biofilms, a germicidal mechanism to invade the host body (Mandell et al., 2007). Oral care treatment with chlorhexidine reduces the risk of VAP (p=0.03). Supported by the other study said that the effect of chlorhexidine and hexadol is equal for VAP prevention (Tan, Banzon, Ayuyao, & de Guia, 2007).

Statistical analysis revealed that chlorhexidine was effective in preventing VAP seen from CPIS score. This is in line with previous study stated that there was a significant effect of chlorhexidine in decreasing the number of oropharyngeal bacteria from 300 ± 0.0 to 160 ± 76.625 with p-value = 0.000 (Mandell et al., 2007). Another study showed that there was a significant difference in the number of colonies of oral bacterial growth between before and after rinse with chlorhexidine with p-value <0.05 (Patabnag, 2016). In this study both honey and chlorhexidine are equally capable of killing both gram positive and negative bacteria. Thus, both materials can be used as an oral hygiene antiseptic to prevent the occurrence of VAP in patients with ventilator installed.

CONCLUSION

Based on the results of this study, it can be concluded that 20% honey solution has the same effect with 0.2% chlorhexidine in preventing VAP, which can be seen from CIPS score. However, further study is needed to add the number of days for observation until the patients no longer use ventilator or extubated. Culture inspection is also necessary to accurately see the number of bacteria related VAP.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

References


secretion drainage on pneumonia. *American Journal of Respiratory and Critical Care Medicine, 176*(1), 1079-1083.


EFFECT OF 14 POINTS ACUPRESSURE ON UPPER AND LOWER EXTREMITY MUSCLE STRENGTH LEVELS IN PATIENTS WITH NON-HEMORRHAGIC STROKE

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Abstract
Background: Acupressure is considered as one form of holistic therapies that can improve tissue perfusion to improve motor function in patients with stroke.
Objective: To analyze the effect of 14 points acupressure on upper and lower extremity muscle strength in patients with non-hemorrhagic stroke patients.
Methods: This was a quasi-experimental study with pretest posttest control group design. Paired comparative analytic design was also used. Thirty-eight participants were selected, which 19 participants assigned in the experiment and control group. The Medical Research Council (MRC) scale was used to measure the lower and upper muscle strengths.
Results: There was a significant difference between the improvement of the upper muscle strength in the experimental group and the control group at day 3, 4, 5, 6, 7 (p = 0.010, p = 0.000, p = 0.000, p = 0.000, p = 0.000); and there was a significant difference between the improvement of the lower extremity muscle strength in the experimental group and the control group at day 3, 4, 5, 6, 7 (p=0.023, p=0.000, p=0.000, p=0.000, p=0.000).
Conclusion: The 14 points acupressure is effective in increasing upper and lower extremity muscle strength in patients with non-hemorrhagic stroke.

Keywords: 14 points acupressure; stroke; upper and lower extremity muscle strength

INTRODUCTION

Stroke is an early and progressive clinical syndrome of focal or global neurologic deficits that lasts 24 hours or more (Mansjoer, 2000). Stroke can cause death due to a non-traumatic blood flow disorder in the brain. Stroke is the most neurological disease that can also lead to serious health problems and affect the disability, motor and sensory dysfunction and death (Manjoer, 2002). Clinical manifestations of acute stroke may include changes in mental status, visual impairment, aphasia, vertigo, nausea, vomiting, headache and decreased motor function as well as decreased extremity muscle strength (Mansjoer, 2000).

These changes affect the physical and mental structures. Thus, it could be said that people with acute stroke will experience a decline in activity such as loss of muscle strength, weakness of the legs and hands, speech impairment, limited view, asymmetry on the
face and the inability of other motor functions. This condition leads to a decline in the function of individuals economically and socially because many strokes occur in the productive age (Muttaqin, 2009).

Treatment of stroke patients is aimed at increasing blood flow to the brain, preventing death and minimizing the disability. The treatment of acute stroke patients in pharmacological therapy is usually given micro plasmin, infused to insert fluids and nutrients, and then administered mannitol or corticosteroids to reduce swelling and pressure in the brain, due to infiltration of white blood cells. Patients with stroke need good handling to prevent physical and mental disability. Of 30% - 40% of people with stroke can recover completely when being handled within the first 6 hours (golden period), but if in that time stroke patients do not get the maximum treatment then there will be physical disability or weakness and decreased muscle strength such as hemiparesis or hemiplegia (Wiwit, 2010).

Nursing care in stroke patients is divided into three phases namely the acute phase, the post-acute phase, and the rehabilitation phase. In the acute phase, medical and nursing actions aimed at maintaining vital functions in the body. In the post-acute phase, nursing action is intended to maintain body function and prevent complications. One of the non-pharmacological therapy programs provided in stroke patients in the post-acute phase in the treatment room to deal with motor disorders is by early mobilization and range of motion exercises. And in post-hospitalized rehabilitation phase, patients need further treatment for motor recovery. The number of disabilities in stroke patients can be minimized using physiotherapy (Atika, 2013).

Acupressure is one form of holistic therapies that can improve tissue perfusion performed to improve motor function in stroke patients. Acupressure is a non-invasive method whose principles of action are based on acupuncture principles. In traditional Chinese medicine, acupressure has been used for the rehabilitation of upper extremities in patients with stroke experiencing hemiplegia and hemiparesis. Acupressure is one of the traditional Chinese therapies based on meridian acupuncture theory with Yin / Yang theory in eastern philosophy (Black & Hawks, 2005; LeMone, Burke, & Gauthier).

The presence of nerve endings and blood vessels that are widely present around the acupressure points will enlarge the response. Mast cells release histamine, heparin, and dakinin protease that cause vasodilation of the blood vessels. Histamine causes the release of nitric oxide from the vascular endothelium, which is the mediator of various cardiovascular, neurological, immune, digestive and reproductive reactions. Mast cells will also release platelet-activating factor (PAF), which is then followed, by the release of serotonin from platelets. Serotonin stimulates the nociceptors themselves and increases the nociception response to bradynkinin. Bradykinin is a powerful vasodilator that causes increased vascular permeability, this results in an increase in blood circulation of the tissues that will lead to an improvement in skeletal abnormalities thus improving motor function in extremity (Saputra & Sudirman, 2009; Si, Wu, & Cao, 1998).

Shin and Lee reported their results in 30 post-hospital stroke patients with hemiplegic shoulder pain who were divided into 15 patients as controls and 15 other patients given acupressure interventions for 20 minutes 2 times a day for 2 weeks, suggesting that acupressure significantly improved upper extremity muscle strength (P <0.01) (Shin & Lee, 2007).

Other studies that have been performed by Kang et al in post-hospital stroke patients (2009) in 56 consecutive samples were divided into 2 groups (each of 28 patients for the control group and intervention groups showed a significant difference between the control group and the intervention, where the intervention group experienced improvement in extremity and daily life activities after
given acupressure daily in 10 minutes for 2 weeks compared with the control group (Kang, Sok, & Kang, 2009).

The results of the study by M. Adam in 34 postpartum stroke patients who experienced muscle weakness and upper extremity motion range showed a significant difference between control and intervention groups, in which the intervention group had an improvement in muscle strength and upper extremity motion range after given acupressure therapy every day for 10 minutes for 7 days compared with the control group (Adam, Nurachmah, & Waluyo, 2014).

Another study in 20 non-hemorrhagic stroke patients with upper extremity muscle weakness showed a significant difference between the control group and the intervention group, in which the intervention group had an improvement in the muscle strength of the upper extremity after given an acupressure at the point of GB 21, LI 15 and TE 14 once daily for 1 month compared with the control group (Sukawana, Sukarja, & Diputra, 2013).

However, acupressure has never been implemented by nurses in hospital as one of therapies to prevent and overcome complications of motor function in stroke patients. Acupressure is one of the nursing actions that can be performed by a nurse and is one of the interventions listed in the Nursing Intervention Classifications (NIC) (Butcher, Bulechek, Dochterman, & Wagner, 2018). It is also said that acupressure is an effective therapy for both prevention and treatment (Longe, 2005).

In addition, acupressure techniques are easy to learn and administered quickly, low cost and effective to overcome various symptoms of disease. The aim of this study was to examine the effect of acupressure on upper and lower extremity muscle strength levels in patients with non-hemorrhagic stroke.

METHODS

Study design
This was a quasi-experimental study with pretest posttest control group design. Paired comparative analytic design was also used.

Setting
The study was conducted at 4 hospitals, namely: the Regional General Hospital of West Nusa Tenggara Province, the General Hospital of Mataram, the Regional General Hospital of West Lombok, and the Regional General Hospital of Central Lombok.

Population and sample
The population in this study was all non-hemorrhagic stroke patients in the four hospitals. Thirty-eight participants were selected, which 19 participants assigned in the experiment and control group. The inclusion criteria of the samples were patients with non-hemorrhagic stroke diagnosis, experienced hemiparesis with muscle strength 1-2 both left and right, compositementis, stable vital signs, admission time less than or equal to 6 hours, first of second stroke attack, both male and female, age ranging from 45-60 years, and willing to be respondents. While the exclusion criteria were patients with decreased awareness, experienced paralysis, unstable vital signs, admission time more than 6 hours, having stroke attack for more than 2 times, age over 60 years, and having contraindication of acupressure such as wounded skin, fracture, and swelling.

Intervention
The provision of acupressure intervention is performed by the researcher who has the competence to perform acupressure after following the acupressure training and has been graduated from the Certified Chiropractors and Acupressure Association of Indonesia (ACASI). The experiment group was given acupressure at 14 points of LI 15 or JianYu, SI 9 or Jian Zhen, TE 14 or Jian Liao, GB 21 or Jian Jing, SI 11 or Tian Zong, SI 12 or Bing Feng, ST 36 or Zusanli, GB 34 or Yangqing Quan, ST 41 or Jieexi, GB 39 or Xuan Zhong, ST 31 or Biguan, GB 30 or
Huan Tiao, SP 10 or Xuchai, ST 34 or Liang Qiu done for 15 minutes, once a day, for 7 days by way of massage using the thumb hand with the technique of sedation (massage with a circular motion counterclockwise) (Adikara R., 2007; Kang et al., 2009) (See Figure 1). The control group was given a treatment (ROM) in accordance with the operational standard of procedure in the Stroke Center.

The control group was given a treatment (ROM) in accordance with the operational standard of procedure in the Stroke Center.

**Figure 1** 14-accupressure points to strengthen lower and upper extremity muscles

**Instruments**
Lower and upper muscle strength
The lower and upper muscle strengths were measured using the Medical Research Council (MRC) scale (Warlow et al., 2008). This scale is often used to measure motor weakness and evaluate the progress over time on the weakened muscle strength. Muscle strength can be described as the ability of the muscles to withstand both external and internal forces. Muscle strength is closely related to the neuromuscular system, which is how much the ability of the nervous system to activate the muscles to perform contractions. Muscle strength assessment has a measurement scale commonly used to check patients who
experience paralysis, and also to see the progress during treatment (Warlow et al., 2008). The researchers used the same muscle strength assessment sheet, which was used by the previous researcher based on the Lumbantobing standard format used in daily medical and nursing practice (Adam et al., 2014).

The measurements of muscle strength were done by research assistants (professional physiotherapist). This scale consists of 6 grades, ranging from a score of 0 to 5, where a score of 0 = no contraction, 1 = having muscle twitch and slight contraction, 2 = active motion limited to gravity, 3 = active motion that can defy gravity, 4 = active movement, which can resist gravity and hold the examiner slightly, 5 = normal muscle strength. According to Ginsberg, this scale is commonly used in practice by doctors and nurses, and this scale is also the best semi-quantitative scale for assessing muscle strength and detecting muscle weakness (Ginsberg, 2008).

**Ethical consideration**
This study has been approved by the four hospitals prior to data collection. Each respondent was given and signed informed consent regarding the purpose, benefits and research procedures.

**Data analysis**
Shapiro-wilk test was used to test the normality of the data. Repeated ANOVA was used to analyze the effect of 14-point acupressure on upper and lower extremity muscle strength. And post-hoc Bonferroni test was used to see the most significant group.

**RESULTS**
Table 1 shows that the majority of the groups aged 46-65 years, which the mean age of experiment and control group was 94.7%. The number of males and females in both groups were equal, as well as the frequency of stroke in the experiment and control group. There were no significant differences in age gender and frequency of stroke in the experiment and control group with p-value >0.05. While Table 2 shows the difference in time of improvement in upper extremity muscle strength before and after treatment. Acupressure interventions had a significant effect on improving upper extremity muscle strength on day 2 with day 3, day 3 with day 4, day 4 with day 5, day 5 with day 6, day 6 with day 7, and pre-intervention with day 7.

**Table 1** Characteristics of respondents based on age, gender, frequency of stroke in the experiment and control group (n=38)

<table>
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<td>%</td>
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<td>19 (52.26±4.408)</td>
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<td>1 5.3</td>
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<tr>
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<td>18 94.7</td>
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<td>Second attack</td>
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<td>10 52.6</td>
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Table 2 Analysis of differences in upper extremity muscle strength before and after given intervention in the experiment and control group (pairwise comparisons) (n=38)

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<th>(J) Day</th>
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<td>.091</td>
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<td>.156</td>
<td>.004</td>
</tr>
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</table>

Table 3 Analysis of differences in the improvement of upper extremity muscle strength between experimental and control group (n=38)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement of upper</td>
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<td>1.53</td>
<td>0.51</td>
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<tr>
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<td>Control</td>
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<td>0.51</td>
<td></td>
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<tr>
<td>Pre</td>
<td>Experiment</td>
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<td>0.51</td>
<td>.754</td>
</tr>
<tr>
<td></td>
<td>Control</td>
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<td></td>
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<td>0.51</td>
<td></td>
</tr>
<tr>
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<td>Experiment</td>
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<tr>
<td></td>
<td>Control</td>
<td>1.47</td>
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<td></td>
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<tr>
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<tr>
<td></td>
<td>Control</td>
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<td>0.61</td>
<td></td>
</tr>
<tr>
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<td>Experiment</td>
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<td>.000</td>
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<tr>
<td></td>
<td>Control</td>
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<td>0.76</td>
<td></td>
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<tr>
<td>Day 5</td>
<td>Experiment</td>
<td>3.16</td>
<td>0.50</td>
<td>.000</td>
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<td></td>
<td>Control</td>
<td>1.84</td>
<td>0.68</td>
<td></td>
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<tr>
<td>Day 6</td>
<td>Experiment</td>
<td>3.95</td>
<td>0.71</td>
<td>.000</td>
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<tr>
<td></td>
<td>Control</td>
<td>2.16</td>
<td>0.69</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows that there was a significant difference between the improvement of the upper muscle strength in the experimental group and the control group at day 3, 4, 5, 6, 7 (p = 0.010, p = 0.000, p = 0.000, p = 0.000, p = 0.000). Although both groups have an improvement, but the experimental group had a higher rate of muscle strength improvement (mean 3.95) than the control group (mean 2.16). The improvement of upper muscle strength was 61.27%, with an effect size of 1.88.
Table 4 Analysis of differences in lower extremity muscle strength before and after given intervention in the experiment and control group (pairwise comparisons) (n=38)

<table>
<thead>
<tr>
<th>Group</th>
<th>(I) Day</th>
<th>(J) Day</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
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<td>7</td>
<td>2.220E-16</td>
<td>.037</td>
<td>.000</td>
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<tr>
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<td>Pre</td>
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<td>.000</td>
<td>.000</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>-.421*</td>
<td>.082</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>-.579</td>
<td>.082</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>-.316*</td>
<td>.077</td>
<td>.000</td>
</tr>
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<td></td>
<td>4</td>
<td>5</td>
<td>-.421*</td>
<td>.107</td>
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<td>5</td>
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<tr>
<td></td>
<td>6</td>
<td>7</td>
<td>-2.421*</td>
<td>.168</td>
<td>.000</td>
</tr>
<tr>
<td>Control</td>
<td>Pre</td>
<td>7</td>
<td>.053</td>
<td>.037</td>
<td>.017</td>
</tr>
<tr>
<td></td>
<td>Pre</td>
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<td>.000</td>
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<td></td>
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<td></td>
<td>2</td>
<td>3</td>
<td>-2.220E-16</td>
<td>.082</td>
<td>1.000</td>
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<td>4</td>
<td>5</td>
<td>-.211</td>
<td>.107</td>
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<tr>
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<td>5</td>
<td>6</td>
<td>-.263*</td>
<td>.107</td>
<td>.056</td>
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<td>6</td>
<td>7</td>
<td>-.421*</td>
<td>.168</td>
<td>.019</td>
</tr>
</tbody>
</table>

Table 4 shows the difference in time of improvement in lower extremity muscle strength before and after treatment. Acupressure interventions had a significant effect on improving lower extremity muscle strength on day 2 with day 3, day 3 with day 4, day 4 with day 5, day 5 with day 6, day 6 with day 7, and pre-intervention with day 7. The group control shows that there was a significant influence on day 6 with day 7, and pre-intervention with day 7.

Table 5 Analysis of Differences in the improvement of lower extremity muscle strength between experimental and control group (n=38)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
<th>P</th>
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<tbody>
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<td></td>
<td></td>
</tr>
<tr>
<td>extremity muscle strength</td>
<td>Experiment</td>
<td>1.53</td>
<td>0.51</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.53</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>Experiment</td>
<td>1.53</td>
<td>0.51</td>
<td>0.754</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.47</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Day 2</td>
<td>Experiment</td>
<td>1.53</td>
<td>0.51</td>
<td>0.754</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.47</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>Experiment</td>
<td>1.95</td>
<td>0.71</td>
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</tr>
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<td></td>
<td>Control</td>
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<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>Experiment</td>
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<td>0.70</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.47</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Day 5</td>
<td>Experiment</td>
<td>2.84</td>
<td>0.69</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.47</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Day 6</td>
<td>Experiment</td>
<td>3.26</td>
<td>0.65</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Control</td>
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<td></td>
</tr>
<tr>
<td>Day 7</td>
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<td>0.71</td>
<td>0.000</td>
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<tr>
<td></td>
<td>Control</td>
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<td>0.62</td>
<td></td>
</tr>
</tbody>
</table>

Belitung Nursing Journal, Volume 4, Issue 2, March-April 2018
Table 5 shows that there was a significant difference between the improvement of the lower extremity muscle strength in the experimental group and the control group at day 3, 4, 5, 6, 7 (p=0.023, p=0.000, p=0.000, p=0.000, p=0.000). Although both groups have an improvement, but the experimental group had a higher rate of muscle strength improvement (mean 3.95) than the control group (mean 1.95). The improvement of lower muscle strength was 61.27%, with an effect size of 2.53.

**DISCUSSION**

Findings of this study showed that there was a significant effect of 14-points acupressure on lower and upper muscle strengths. There was a significant difference between the experiment and control group. The results of this study are supported by the research conducted by Shin and Lee stating that acupressure points in the scapula region have a very close relationship with the trigger point to improve the strength of upper extremity muscle (Shin & Lee, 2007). The trigger point is a sensitive point that when it is pressed will cause pain at distant places at that point. This is a local degeneration in muscle tissue caused by muscle spasm, trauma, endocrine imbalance and muscle imbalance. The trigger point can be found in skeletal muscles and tendons, ligaments, joint capsules, periosteum, and skin. Normal muscle has no trigger point (Shin & Lee, 2007).

Presence of nerve endings and blood vessels that are widely present around the acupressure points will enlarge the response. Mast cells release histamine, heparin, and dab kinin protease that cause vasodilation of blood vessels. Histamine causes the release of nitric oxide from the vascular endothelium, which is the mediator of various cardiovascular, neurological, immune, digestive and reproductive reactions. Mast cells also release Platelet Activating Factor (PAF), which is then followed by serotonin release from platelets. Serotonin stimulates the nociceptors themselves and increases the nociception response to bradykinin. Bradykinin is a powerful vasodilator that causes increased vascular permeability, which results in an increase in blood circulation of the tissues that will lead to an improvement in skeletal abnormalities that can more rapidly improve motor function on extremity (Si et al., 1998).

In the control group a passive ROM was administered in accordance with the hospital's procedure for stroke patient treatment. After given passive ROM exercise once daily with duration of 15 minutes for 7 days, patients experienced an increase in upper muscle strength of 31.94%. According to the theory of Susan (1996), providing passive ROM exercises in stroke patients will stimulate the brain's motor neurons with transmitter release (acetylcholine) to stimulate the cells to activate calcium resulting in protein integrity (Hinchliff, Montague, Watson, & Herbert, 2005). If calcium and troponin C are activated then actin and myosin and skeletal muscle function can be maintained, so that there will be an increase in muscle strength. The mechanism of contraction can increase the smooth muscle of the extremity. Passive ROM exercises can cause stimulation, thus increasing the activation of chemicals, neuromuscular and muscular. Smooth muscles on filament of actin and myosin have chemical properties and interact between one another. The interaction process is activated by calcium ions and ATP, and then broken down into ADP to provide energy for contraction of the extremity muscles (Hinchliff et al., 2005).

**CONCLUSION**

The 14-points acupressure is effective to increase upper and lower extremity muscle strength in patients with non-hemorrhagic stroke. This intervention can be a part of operational standard of procedures in the treatment of non-hemorrhagic stroke patients. Acupressure therapy should be a part of clinical nurse competencies in caring stroke patients.
Declaration of Conflicting Interests
None declared.

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Author Contribution
All authors contributed equally in this study.

References


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176
THE EFFECTIVENESS OF COACHING USING SBAR (SITUATION, BACKGROUND, ASSESSMENT, RECOMMENDATION) COMMUNICATION TOOL ON NURSING SHIFT HANDOVERS

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Abstract
Background: The SBAR (situation, background, assessment, recommendation) method assists nurses in communicating information in nursing shift handover. Inaccurate shift handover can have a serious impact on patients due to poor communication. Optimal resource development can be done by coaching as the best guidance method from manager for directional discussion and guidance activity to learn to solve problem or do better job and build nursing leadership culture in clinical service.

Objective: To analyze the effectiveness of coaching method using SBAR communication tool on nursing shift handovers.

Methods: This was a quasi-experimental study with pretest posttest control group design. Fifty-four nurses were selected using a consecutive sampling, which 27 assigned in the experiment and control group. An observation checklist was developed by the researchers based on the Theory of Lardner to evaluate the effectiveness of the implementation of coaching using SBAR on nursing shift handover. Independent t-test, Mann-Whitney test and Wilcoxon test were used for data analyses.

Results: There was an increase in coaching ability of head nurses in the implementation of SBAR in nursing handover after 2-weeks and 4-weeks of coaching. There was also a significant improvement of the use of SBAR on nursing shift handover in the experiment group (p <0.05) compared to the control group.

Conclusion: Coaching using SBAR (situation, background, assessment, recommendation) communication tool was effective on nursing shift handovers. There was a significant increase of the capability of head nurses and nursing shift handovers after given coaching intervention.

Keywords: coaching; SBAR; handover; nursing

INTRODUCTION

Nurses in the health service are the leading healthcare professional and the longest interacting with patients. Nurses should be able to maintain effective cooperation with all members of the health team. The ability to communicate is a fundamental aspect of nursing. The nurses interact directly with the patients for 24 hours, resulting in communication (Nasir, Muhith, Sajidin, & Mubarak, 2009). Through the communication nurse can provide information or explanation to the patients, persuade or perform other
tasks. In this communication the nurse is expected to be able to influence and convince the other party in patients, other health workers and colleagues. Nurses who can communicate well will improve the image of professionalism (Nasir et al., 2009).

Patient safety has become an important issue both global and national because of the increasing number of medical error cases that occurred in various countries. The Institute of Medicine (IOM) reported Unwanted Event data on hospitals in the United States, which is 1.5 million injured patients per year from treatment errors and 7,000 of them reportedly dead (Khushf, 2008).

In Indonesia, data on unexpected events, especially the event of near-injury is still scarce, but on the other hand there is an increase in allegations of "malpractice" which is not necessarily in accordance with the final verification. Considering the patient's safety has become a public demand, the implementation of hospital patient safety program needs to be done then the hospital needs to implement the patient's safety objectives. The patient's safety goals consist of 6 patient safety goals, and the most important element of care to patients is effective communication (Depkes, 2008).

Communication of information provided by nurses in shift exchanges or the process of handing out patients from outpatient to inpatient better known as handover is helpful in the patient care. A well-done handover can help identify errors and facilitate the continuity of patient nurses. Communication on shift handover has a very important relationship in ensuring continuity, quality and safety in health service. Communication in handover if not done right can cause some problems, including delays in medical diagnosis and increased possible side effects, as well as other consequences including higher costs of health care, larger providers and patient dissatisfaction (Alvarado et al., 2006).

Previous study stated that incidents in the hospital are related to communication problems (Clark, Squire, Heyme, Mickle, & Petrie, 2009). Handover is a technique or a way to convey and receive something (information) related to the patient's situation. Handover should be done as effectively as possible by explaining briefly, clearly and completely about the nurse's independent actions, collaborative actions that have been done / not and the development of patients at that time. The information submitted must be accurate so that the continuity of nursing care can run perfectly. Nursing handover done by nurses between hospital units in the hospital is in writing and oral (Field et al., 2011).

Coaching guidance method is a way to achieve the best performance for individuals and organizations. Coaching is one way to maximize performance (Gunawan, Aungsuroch, & Fisher, 2017; McNamara et al., 2014). It does not provide new skills or knowledge but instead it creates a coach to apply the knowledge, skills gained from previous experience to show the best performance. The synthesis of research results noted that 96% of coaching is able to improve individual performance and 87% of coaching can improve organizational performance (Neale, Spencer-Arnell, & Wilson, 2011).

A previous study conducted at Hajj Hospital Jakarta shows that 60% of head nurse coaching capability is still lacking (ST. Nurhayani, 2011). WHO statement relating to the process of giving guidance states the provision in the field of nursing using coaching method as an effort to increase the professionalism of nurses is still rare. Implementation of coaching is still done through seminars and workshops as well as traditional learning processes that emphasize assessment of what information has been learned (McNamara et al., 2014).

Based on the results of preliminary studies conducted in hospitals of dr.Moewardi Surakarta that 6 of 10 nurses declared not able to carry out SBAR (situation, background, assessment, recommendation) communication

When doing shift handover nurses sometimes do not convey information relating to the condition of the patient includes medical diagnosis, given drugs, the patient's developmental record, and sometimes not delivering the results of the assessment of the patient's condition including the patient's problem, vital signs and the necessary action. It is found that more than 50% of nurses and person in charge in the hospital Dr. Moewardi Surakarta were still confused to determine point B (Background) and A (Assessment) in applying SBAR communication method.

The results of interviews with 10 implementing nurses stated that no coaching program and guidance have been conducted. Evaluation conducted by the head nurses is based on their respective leadership styles, using classical methods of instruction and assignment in the supervision tasks. There is no method of coaching in the implementation and direction. The management stated that the hospital always strives to improve the existing human resources. Efforts already made by hospitals to improve resources are through nursing training such as head nurse’s management training, providing further study opportunities to nurses. Training and seminar activities are often held, but coaching training as one of the management functions of actuating has never been done.

**METHODS**

**Study design**

This was quasi-experimental study with pretest posttest control group design.

**Sample**

The population in this study was the nurses in the inpatient ward of the General Hospital of Dr. Moewardi Surakarta amounted to 429 nurses. Fifty-four nurses were selected using consecutive sampling, which 27 assigned in the experiment and control group. The inclusion criteria of nurses were nurses in the inpatient ward, working more than one year, Diploma III and Bachelor level of nursing educational background.

**Instruments**

An observation checklist was developed by the researchers to evaluate the effectiveness of the implementation of coaching using SBAR on nursing shift handover with a choice of yes and no. The observation sheet consisted of three parts, namely preparation stage, information exchange stage, and information checking stage. The observation checklist was developed based on the theory of Lardner (Lardner, 1996). Content validity has been done with good validity result, and reliability was done using Pearson product moment, which was observed by head nurse.

<table>
<thead>
<tr>
<th>Enumerator</th>
<th>Sig. (2-tailed)</th>
<th>Pearson Correlation</th>
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<tbody>
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<td>0.930</td>
</tr>
<tr>
<td>Enumerator 1* Enumerator 3</td>
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<td>0.956</td>
</tr>
<tr>
<td>Enumerator 2* Enumerator 3</td>
<td>0.000</td>
<td>0.956</td>
</tr>
</tbody>
</table>

**Data collection**

Preparation of data collection began with the creation of coaching guidance modules and handover observation sheets with SBAR. The study started from initial data before coaching guidance counseling through measurement with SBAR observation sheet on prepared handover. The observation was done directly by the researchers. Coaching training with SBAR material on handover was given to the nurse who performed for one day. Before and after the training was done pre-test and post-test to measure the knowledge of nurses in the implementation of SBAR on handover. The coaching by the head nurse was implemented for two weeks. The researcher and the head nurse agreed on the implementation of the coaching according to the phases that have been described, then the researchers observed the coaching by the head nurses and conducted joint evaluation using the observation sheet provided. The
implementation of coaching was done independently by head nurses for two weeks without any assistance and influence of the researcher.

Data analysis
Univariate analysis was used to analyze the existing variables descriptively according to the data type. Univariate analysis is a process of data processing by describing and summarizing data scientifically in the form of tables and graphs (Notoatmodjo, 2010). Data were presented in terms of mean, median, mode, standard deviation and median of SBAR in the experiment group and the control group, which displayed in tabular form. Bivariate analysis was also used to analyze the influence between two variables namely dependent variable and independent variable. Bivariate analysis was conducted to prove the research hypothesis that coaching training resulted in different application of SBAR on handover. The defined confidence interval value was 95% with a significance level of 5% (α = 0.05). The statistical test of data normality in control group and in the experiment group using Saphiro-Wilk because the sample was less than 50, with p-value = 0.000 (<0.05). Assessment of SBAR implementation on handover before and after coaching training in the experiment and control groups used Friedman Test.

RESULTS
The characteristics of respondents as shown in the table 2 aged 29.3 years with the mean length of working of 3.26 years. The majority of respondents were male (53.75%) with Diploma III background (61.15%).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Category</th>
<th>Frequency</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>Mean</td>
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</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>24-53</td>
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<tr>
<td>Length of working</td>
<td>Mean</td>
<td>3.26</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>2-20</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>29 (53.75)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>25 (46.25)</td>
</tr>
<tr>
<td>Educational background</td>
<td>S1 (Bachelor)</td>
<td>21 (38.85)</td>
</tr>
<tr>
<td></td>
<td>D3 (Diploma III)</td>
<td>33 (61.15)</td>
</tr>
</tbody>
</table>

Figure 1 Coaching of head nurses based on observation in the experiment group
Figure 1 shows that there was an improvement of coaching ability of head nurse from pre-coaching and post-coaching in two weeks, as well as the improvement in four weeks of coaching; while Figure 2 shows that there was no improvement of coaching ability of head nurse from pre-coaching and post-coaching in two weeks, as well as no improvement in four weeks of coaching.

**Table 3** The implementation of SBAR on nursing shift handover before and after coaching in the experiment and control group

<table>
<thead>
<tr>
<th></th>
<th>Experiment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before coaching</td>
<td>10.89</td>
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</tr>
<tr>
<td></td>
<td>7-16</td>
<td>7-14</td>
</tr>
<tr>
<td>After coaching</td>
<td>15.93</td>
<td>10.52</td>
</tr>
<tr>
<td></td>
<td>10-18</td>
<td>10-14</td>
</tr>
</tbody>
</table>

Table 3 shows that the score of the implementation of SBAR on nursing shift handover in the experiment group before coaching 10.89, and then increased to 15.93 after coaching. While in the control group, before coaching the score of the implementation of SBAR on handover was 10.30, and no improvement after coaching with score of 10.52.
Table 4 The implementation of SBAR on nursing shift handover before coaching in the experiment and control group using Independent t-test

<table>
<thead>
<tr>
<th>Value</th>
<th>Experiment group</th>
<th>Control group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>10.89</td>
<td>10.30</td>
<td>0.234*</td>
</tr>
<tr>
<td>Median</td>
<td>11.00</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>16</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows that the mean of the implementation of SBAR on nursing shift handover in the experiment group (10.89) and control group (10.30) was relatively same with p-value 0.234 (>0.05).

Table 5 The implementation of SBAR on nursing shift handover after coaching in 2 weeks in the experiment and control group using Mann-Whitney test

<table>
<thead>
<tr>
<th>Value</th>
<th>Experiment group</th>
<th>Control group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>14.78</td>
<td>10.48</td>
<td>0.024*</td>
</tr>
<tr>
<td>Median</td>
<td>15.00</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>17</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>10</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Table 5 shows that after 2 weeks of coaching, the experiment group had a higher mean score of SBAR than the control group. The average score of SBAR score in the experiment group was 14.78 with a minimum value of 10 and a maximum value of 17. Unlike the control group, the average score of the SBAR score was 10.48 with a minimum score of 7 and a maximum value of 14. From Mann-Whitney statistical test results obtained p = 0.024 (<0.05), which indicated that there was a significant difference in mean score of SBAR between the experiment group and the control group. The difference of SBAR between the experiment group and the control group was due to the treatment given to the two groups was not the same. In the experiment group, the researchers gave treatment in the form of coaching guidance method on SBAR on handover while in the control group was given Standard Operating Procedures (SPO).

Table 6 The implementation of SBAR on nursing shift handover after coaching in 4 weeks in the experiment and control group using Mann-Whitney test

<table>
<thead>
<tr>
<th>Value</th>
<th>Experiment group</th>
<th>Control group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>15.98</td>
<td>10.52</td>
<td>0.000*</td>
</tr>
<tr>
<td>Median</td>
<td>16.00</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>18</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>10</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 shows that after 4 weeks of coaching, the experiment group had a higher mean of SBAR score than the control group. The average score of SBAR score in the experiment group was 15.98 with a minimum value of 10 and a maximum value of 18. Unlike the control group, the average score of the SBAR score was 10.52 with a minimum score of 7 and a maximum value of 14. Mann-Whitney statistical test results obtained p = 0.000 (<0.05), which shows that there was a significant difference in mean score of SBAR between the experiment group and the control group.
Table 7 The implementation of SBAR on nursing shift handover before and after coaching in the experiment and control group using Friedman test

<table>
<thead>
<tr>
<th>Group</th>
<th>Before coaching</th>
<th>After 2 weeks coaching</th>
<th>After 4 weeks coaching</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>10.89</td>
<td>14.78</td>
<td>15.98</td>
<td>0.000*</td>
</tr>
<tr>
<td>Control</td>
<td>10.30</td>
<td>10.48</td>
<td>10.52</td>
<td>0.174*</td>
</tr>
</tbody>
</table>

Table 7 shows that the average score of the implementation of SBAR of the experiment group before treatment (pretest) was 10.89, increased to 14.78 after 2 weeks of coaching and increased to 15.98 after 4 weeks of coaching. There was also an increase of score in the control group where the mean score of SBAR before treatment (pretest) was 10.30, increased to 10.48 after given SPO. However, the score of the implementation of SBAR in the experiment group was higher than the score in the control group.

Table 8 Differences in the mean value of the implementation of SBAR on nursing shift handover before and after coaching in the experiment and control group using Wilcoxon test

<table>
<thead>
<tr>
<th></th>
<th>Experiment group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>P-value</td>
</tr>
<tr>
<td>Pretest vs Coaching 2 weeks</td>
<td>3.89</td>
<td>0.000*</td>
</tr>
<tr>
<td>Pretest vs Coaching 4 weeks</td>
<td>5.04</td>
<td>0.000*</td>
</tr>
<tr>
<td>Coaching 2 weeks vs Coaching 4 weeks</td>
<td>1.15</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Table 8 shows that there was significant difference of the mean value of the implementation of SBAR between pretest and after coaching for 2 weeks (p=0.000), between pretest and after coaching for 4 weeks (p=0.000), and between coaching for 2 weeks and coaching for 4 weeks (p=0.000); while there was no significant differences in the implementation of SBAR in all time of measurements in the control group with p-value >0.05.

DISCUSSION

The results of this study showed the ability of coaching of head nurses prior to the training in the control group and the experiment group had a mean value of 13.6, with the maximum value of coaching ability according to the observation sheet was 25, so it can be concluded that the ability of coaching ability of the head nurses reached 50%.

After coaching intervention, the capability of head nurses increased significantly with the mean value of 23. According to study, the training will improve skills and skill acquisition. Training can help nurses to work well, behave better, and improve confidence (Gunawan & Aungsuroch, 2017). In line with Law No. 36 of 2009 on Health, it is clear that the continuous development of expertise and authority should be upgraded through continuing education, one of which is training (Undang-undang Republik Indonesia, 2009).

Standard Operating Procedures (SPO) is the internal policy of the hospital and a key supporter of nurse compliance in performing actions in accordance with the standards. The implementation of SPO will be influenced by communication, resources, disposition, bureaucracy, self-desire, organizational support, socialization, and duration of work. Compliance of the SPO implementation is influenced by the length of work, study stated that if the employment over 5 years then the commitment to the organization is increasing with p= 0.001 (Jeli & Ulfa, 2014). Subramanian states that coaching is part of supervision (Subramaniam, Silong, Uli, &
Based on the result of research, it is concluded that coaching using SBAR (situation, background, assessment, recommendation) communication tool was effective on nursing shift handovers. There was a significant increase of the capability of head nurse and nursing shift handover after coaching intervention.

Declaration of Conflicting Interest
None declared.

Funding
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Author Contribution
All authors contributed equally in this study.

References


ST. Nurhayani. (2011). *Hubungan karakteristik perawat pelaksana dengan kemampuan kepala ruangan melakukan bimbingan (coaching) menurut persepsi perawat pelaksana di Ruang Rawat Inap Rumah Sakit Haji Jakarta [Relationship of characteristics of associate nurses with head nurses’ ability in coaching according to nurses’ perspective in the inpatient ward at Haji Hospital Jakarta]*. Jakarta: Magister Ilmu Keperawatan, Fakultas Ilmu Keperawatan.


MUSIC AND AROMATHERAPY: A GOOD COMBINATION FOR REDUCING ANXIETY AND STABILIZING NON-INVASIVE HEMODYNAMIC STATUS IN PATIENTS IN THE INTENSIVE CARE UNIT

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Abstract
Background: Combining musical and aromatherapy therapy is expected to have a stronger effect in the reduction of anxiety and non-invasive hemodynamic stability.
Objective: To examine the effect of the combination of music and aromatherapy on anxiety and non-invasive hemodynamic in patients in the intensive care unit.
Methods: This was a quasi-experimental study with non-equivalent group. An experimental group was given a combined musical and aromatherapy, while a control group was given music therapy. Thirty respondents were selected using accidental sampling, with 15 randomly assigned in the music group and the combination group. HARS scale (Hamilton Anxiety Rating Scale) was used to measure anxiety. Non-invasive hemodynamic status such as blood pressure and heart rate were documented in the observation sheet. Paired t-test and one-way ANOVA were used for data analysis.
Results: There were significant effects of combination therapy on anxiety (p=0.001), diastole (p=0.004) and heart rate (p=0.031), but no significant effect on systole (p=0.387). The music therapy alone had a significant effect on anxiety (p=0.001), systole (p=0.047), and diastole (p=0.037).
Conclusion: The combination of music and aromatherapy had a greater effect than the music therapy alone in decreasing anxiety and stabilizing diastolic blood pressure and heart rate. This therapy can be used as an alternative in nursing interventions and as an input to develop standard of operational procedure for anxiety and non-invasive hemodynamic stability.
Keywords: aromatherapy; noninvasive hemodynamics; anxiety; music therapy

INTRODUCTION

Intensive care is given to patients with stable critical conditions that require care, treatment, and strict observation (MOH, 2010). Living in the intensive care unit can create stressors for patients and families, which can be physical, environmental and psychological stressors. Factors that contribute to stressful events in patients in the intensive care unit include previous experience, pain, anxiety, unfamiliar environment, sleep quality disorders and fear (Jevon & Ewens, 2009). Patients who are critically ill and undergoing intensive care in...
the unit require treatment and interventions that last 24 hours a day. Factors such as therapeutic interventions, diagnostic procedures, medications, basic processes of disease and noise levels in intensive care unit due to use of tools with alarms has an adverse effect on the physiology of the human body. High levels of noise can stimulate cardiovascular; increase gastric secretion, blood pressure, and adrenaline; and can cause heart failure. In the United States about 20 % of post-treatment patients in the intensive care unit experience Post Traumatic Stress Disorder with symptoms of sleep disorders and nightmares (Duke, 2006).

Psychological pressure from intensive care can cause anxiety because patients are simultaneously exposed to life threats, medical procedures, inability to communicate and loss of personal control that can lead to delirium. Such psychophysiological responses can activate the hypothalamus, pituitary, adrenal and sympathetic nervous systems characterized by a patient's hemodynamic changes in the form of increased heart rate, blood pressure, and cardiac output. Anxiety response can increase the workload on the cardiovascular system that is likely to be life threatening (Jevon & Ewens, 2009). Increased anxiety can lead to hemodynamic changes in the cardiovascular system, and can activate the sympathetic nerves thereby increasing the production of norepinephrine, which causes increased peripheral resistance (Aaronson & Ward, 2008).

This condition can lead to an increase in blood pressure. To overcome the problems experienced by patients during intensive care in the unit, pharmacological and non-pharmacological therapy can be done. The most useful and most effective pharmacological therapy is the provision of sedation drugs and analgesic for patients to feel comfortable and calm. Medical practitioners often recommend pharmacological treatments such as Morphine Sulphate, Fentanyl and Hydromorphone that have both sedation and analgesia effects. But the use of this pharmacological therapy, if used continuously, may lead to dependence (So’emah & Khotimah, 2015).

While non-pharmacological therapy used to overcome problems experienced by patients in the intensive care unit can be done by means of deep breathing relaxation, progressive muscle relaxation, self-absorption exercise, music therapy and aromatherapy. Non-pharmacological therapy is an alternative that can be given to reduce anxiety, sleep quality and patient's hemodynamic stability and other psychological problems. Non-pharmacological therapy is expected able to be make someone free from the pressure and anxiety, and affect hemodynamic status of patients (Trappe, 2012).

The existence of alternative therapy such as music therapy can help patients overcome depression and other disorders problems as well as help the healing process. Founder of Indonesian Institute of Music Power (IMDI) Prof. Tjuk Nyak Deviana Daudsjah, D.A.Mus.Ed explained that music therapy can help the healing of patients suffering from various diseases (So’emah & Khotimah, 2015). The results show that harp music has two beneficial effects for patients treated in the intensive care unit, which can relieve stress and the level of pain, stabilize blood pressure and overcome sleep disorders. Anne Baldwin's research states that patients who have low blood pressure, after listening to harp music, have stable blood pressure to normal range (Trappe, 2012).

Music therapy has the power to treat illness and improve one's mind ability. Music therapy can enhance, restore, and maintain physical, mental, emotional, social and spiritual health (So’emah & Khotimah, 2015). Music therapy is an attempt to improve the physical and mental quality with sound stimuli consisting of melody, rhythm, harmony, timbre, shapes and styles organized in such a way as to create music that is beneficial to physical and mental health. The effects of music therapy can widen and flex the blood vessels to facilitate the circulation of blood throughout the body (So’emah &
Suhartini’s research results suggest that music therapy is effective in reducing the physiological response to the anxiety of patients treated at HCU-ICCU (Suhartini, 2010). On the other hand, aromatherapy is also a non-pharmacological therapy that uses the method of treatment through the smell-odor medium derived from certain plant material. Aromatherapy can play a role in relaxing the mind and reducing stress, it is certainly associated with a more orderly emotional state (Wilkinson et al., 2007). The state of human emotion is governed by the brain within the limbic system. The limbic system is different from the limbic lobe. The limbic lobe is a structural unity consisting of archicortex (hypochampalis and gentle dentatus formations), paleocortex (piriformis cortex of anterior hypochampalis gland), mesocortex (gyrus cinguli). Meanwhile, the limbic system is a combined limbic lobes and subcortical nuclei, i.e. amygdala, septales nuclei, hypothalamus, epithalamus, thalamus nucleus, and basal ganglia. The limbic system not only regulates the emotions, but also regulates the memory, and the behavior. Everything can be related to each other (Anatomy, 2008). Research on the effects of lavender aromatherapy on vital signs states that the results of blood pressure significantly improved in the treatment groups compared with the control group. It proves that lavender aromatherapy is effective for influencing vital signs (Lytle, Mwatha, & Davis, 2014).

Combining musical and aromatherapy therapy is expected to have a stronger effect in the reduction of anxiety and non-invasive hemodynamic changes. The mechanism through smell and hearing may have a faster response on anxiety and hemodynamic changes, and both of which have direct contact with the part of the brain in charge of stimulating the formation of effects induced by music therapy and aromatherapy. The received message is then converted into action in the form of release of electrochemical compounds that cause euphoric, relaxed, or sedative that affect the decrease in anxiety and changes in blood pressure, heart rate and MAP. Thus, the aim of this study was to examine the effect of the combination of music and aromatherapy on anxiety and non-invasive hemodynamic in patients in the intensive care unit.

METHODS

Study design
This was a quasi-experimental study with non-equivalent group. An experimental group was given a combined musical and aromatherapy, while a control group was given music therapy.

Setting
This study was conducted in the intensive care units (ICU, HCU, and Intermediate unit) in the general hospital of Siti Khodijah Sepanjang Sidoarjo from January 2017 until February 2017.

Population and sample
The target population in this study was all patients who were treated in the intensive care units (ICU, HCU, and Intermediate unit) in the general hospital of Siti Khodijah Sepanjang Sidoarjo. The population in the last 6 months (July 2016-December 2016) was a total of 288 patients, the average patient per month amounted to 16 patients. There were 30 samples selected using accidental sampling, with 15 samples randomly assigned in the music group and combination group.

The inclusion criteria of the sample were patients, who did not use sedation drugs or other medicines, compositions, have been given treatment during 1x24 hours. The exclusion criteria were patients using respiratory or ventilator aids, unconscious, patients receiving sedative medications, having a history of impaired sense of smell and hearing loss.

Intervention
The experiment group was given a combination of music therapy and aromatherapy. Music therapy was performed...
for 30 minutes a day. The patient listened to music using the headphone in the MP3 with low volume. The title of the music was Sound From Heaven, which can be heard before bedtime, or as the patient wishes, no matter if the patient fell asleep while listening to the music. While aromatherapy was given with 3 drops of 10 ml water for 30 minutes using essence oil of ylang ylang, aromatherapy diffuser tool placed on the table near the patient so that can be inhaled easily by patient. Both actions were performed in accordance with the existing procedures in the same way given together between music therapy and aromatherapy. Respondents listened to music while giving aromatherapy. The music group only was only given the music of Sound From Heaven using the headphone in the MP3 with low volume, similar with the combination group.

Instruments
HARS scale (Hamilton Anxiety Rating Scale) was used to measure anxiety (Hamilton, 1960). Each observed item was given 5 levels of scores between 0 and 4, and the degree of anxiety measurements by summing the scores. The number of possible scores is <14, 14-20, 21-27, 28- 41, 42- 56. In this study, data retrieval of anxiety using HARS scale was performed by the nurses (research assistants) and the researcher. While non-invasive hemodynamic status of patients such as blood pressure and heart rate were documented in the observation sheet.

Ethical consideration
This study has been approved the Research Ethics Committee of Poltekkes Kemenkes Semarang with approval number: 073 / KEPK / Poltekkes-smg / EC / 2017. Prior to data collection, respondents were given informed consent, providing information about the purpose, benefits and research procedures.

Data analysis
Data were analyzed using univariate analysis (frequency distribution of blood pressure, heart rate, anxiety) and bivariate analysis using paired t-test and one-way ANOVA to see the effect of both groups and examine differences in anxiety and non-invasive hemodynamic changes.

RESULTS
Based on Table 1 the average of the distribution of anxiety and non-invasive hemodynamic before and after intervention of music therapy and combination therapy (aromatherapy-music therapy) showed that mean values of anxiety and systolic blood pressure decreased, while diastolic blood pressure tended to increase, and heart rate there was an increase and decrease after getting the intervention.

Table 1 Distribution of anxiety and non-invasive hemodynamic changes before and after given music therapy and combination therapy (music-aromatherapy) (n=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Music therapy</th>
<th>Combination therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (Mean ± SD)</td>
<td>Post (Mean ± SD)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>34.80±4.25</td>
<td>23.13±3.9</td>
</tr>
<tr>
<td>Systole</td>
<td>133.20±19.62</td>
<td>125.60±9.51</td>
</tr>
<tr>
<td>Diastole</td>
<td>73.20±8.8</td>
<td>78.80±4.84</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>81.00±13.48</td>
<td>79.93±7.28</td>
</tr>
</tbody>
</table>
Table 2 Normality test using Kolmogorov Smirnov

<table>
<thead>
<tr>
<th>Variable</th>
<th>Music Therapy</th>
<th>Combination Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systole (pre)</td>
<td>0.683</td>
<td>0.387</td>
</tr>
<tr>
<td>Systole (post)</td>
<td>0.646</td>
<td>0.720</td>
</tr>
<tr>
<td>Diastole (pre)</td>
<td>0.598</td>
<td>0.592</td>
</tr>
<tr>
<td>Diastole (post)</td>
<td>10.024</td>
<td>0.980</td>
</tr>
<tr>
<td>Heart rate (pre)</td>
<td>0.760</td>
<td>0.601</td>
</tr>
<tr>
<td>Heart rate (post)</td>
<td>0.949</td>
<td>0.923</td>
</tr>
<tr>
<td>Anxiety (pre)</td>
<td>0.676</td>
<td>0.843</td>
</tr>
<tr>
<td>Anxiety (post)</td>
<td>0.560</td>
<td>0.553</td>
</tr>
</tbody>
</table>

*p*One sample K-S (p > 0.05)

Table 2 shows that all variables in the music therapy and combination therapy had *p*-value >0.05, which indicated that all data were in normal distribution. While Table 3 shows that all variables had *p*-value >0.05, which indicated that all variances in all variables in both music group and combination group were homogeneous.

Table 3 Homogeneity using Levene’s test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention</th>
<th><em>p</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Music therapy</td>
<td>0.126*</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Music therapy</td>
<td>0.335*</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td></td>
</tr>
<tr>
<td>Systole</td>
<td>Music therapy</td>
<td>0.464*</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td></td>
</tr>
<tr>
<td>Diastole</td>
<td>Music therapy</td>
<td>0.232*</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 Effect of music therapy alone on anxiety and non-invasive hemodynamic using paired t-test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th><em>t</em></th>
<th><em>p</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td>0.001*</td>
</tr>
<tr>
<td>Systole</td>
<td>133.20</td>
<td>2.183</td>
<td>0.047*</td>
</tr>
<tr>
<td>Diastole</td>
<td>73.20</td>
<td>-0.309</td>
<td>0.037*</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>81.00</td>
<td>0.310</td>
<td>0.761</td>
</tr>
</tbody>
</table>

*Significant *p* <0.05

Table 4 shows that music therapy has significant effects on anxiety (*p*=0.001), systole (*p*=0.047), and diastole (*p*=0.037). There was a significant decrease on the mean of anxiety, systole, and diastole after given intervention. However, there was no significant effect of music therapy on heart rate (*p*=0.761) although there was a slightly decrease of the mean after intervention. Table 5 shows that there were significant effects of combination therapy on anxiety (*p*=0.001), diastole (*p*=0.004) and heart rate (*p*=0.031), but no significant effect on systole (*p*=0.387).
Table 5 Effect of combination therapy on anxiety and non-invasive hemodynamic using paired t-test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (Pre)</th>
<th>Mean (Post)</th>
<th>t</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>34.20</td>
<td>19.13</td>
<td>11.655</td>
<td>0.001*</td>
</tr>
<tr>
<td>Systole</td>
<td>127.53</td>
<td>124.53</td>
<td>0.893</td>
<td>0.387</td>
</tr>
<tr>
<td>Diastole</td>
<td>72.53</td>
<td>79.73</td>
<td>-3.458</td>
<td>0.004*</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>82.33</td>
<td>88.13</td>
<td>-2.400</td>
<td>0.031*</td>
</tr>
</tbody>
</table>

Table 6 Analysis of difference in anxiety and non-invasive hemodynamic after given music therapy alone and combination therapy using One Way ANOVA

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention</th>
<th>Mean</th>
<th>F</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Music Therapy</td>
<td>23</td>
<td>4.457</td>
<td>0.018*</td>
</tr>
<tr>
<td></td>
<td>Combination Therapy</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systole</td>
<td>Music Therapy</td>
<td>126</td>
<td>0.358</td>
<td>0.701</td>
</tr>
<tr>
<td></td>
<td>Combination Therapy</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastole</td>
<td>Music Therapy</td>
<td>79</td>
<td>3.462</td>
<td>0.041*</td>
</tr>
<tr>
<td></td>
<td>Combination Therapy</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Rate</td>
<td>Music Therapy</td>
<td>80</td>
<td>5.904</td>
<td>0.006*</td>
</tr>
<tr>
<td></td>
<td>Combination Therapy</td>
<td>88</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 shows that there were significant differences in anxiety (p=0.018), diastole (p=0.041), and heart rate (p=0.006) between music therapy group and combination group. There was no difference in systole (p=0.701) between both groups.

Table 7 Post Hoc mean difference using Tukey HBD

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention (I)</th>
<th>Intervention (J)</th>
<th>Mean Difference</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Music therapy</td>
<td>Combination therapy</td>
<td>4.000</td>
<td>0.020*</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td>Music therapy</td>
<td>-4.000</td>
<td>0.020*</td>
</tr>
<tr>
<td>Systole</td>
<td>Music therapy</td>
<td>Combination therapy</td>
<td>1.067</td>
<td>0.959</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td>Music therapy</td>
<td>-1.067</td>
<td>0.959</td>
</tr>
<tr>
<td>Diastole</td>
<td>Music therapy</td>
<td>Combination therapy</td>
<td>-0.933</td>
<td>0.900</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td>Music therapy</td>
<td>0.933</td>
<td>0.900</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>Music therapy</td>
<td>Combination therapy</td>
<td>-8.200</td>
<td>0.006*</td>
</tr>
<tr>
<td></td>
<td>Combination therapy</td>
<td>Music therapy</td>
<td>8.200</td>
<td>0.006*</td>
</tr>
</tbody>
</table>

Table 7 shows that there was significant difference in anxiety in the music group and combination group (p=0.020). However, based on HARS score the combination therapy had a higher effect in reducing anxiety (HARS score 19) compared with music therapy alone. While the music therapy alone had a better effect on stabilizing blood pressure than combination therapy with the average of blood pressure of 126/79 mmHg. There was also significant difference in heart rate in both groups (p=0.06) with the average of heart rate of 88 per minute.

DISCUSSION

Effect of Music therapy alone on anxiety and non-invasive hemodynamics

Findings of this study showed that there was a significant effect of music therapy alone on anxiety. This is in line with other studies showing that music therapy is effective to reduce physiological changes in anxiety (Suhartini, 2010). Previous research has also shown that music therapy is effective in reducing anxiety in patients treated in the HCU-ICCU (Wijanarko, 2006). Previous
research suggests that soft music will have a calming effect and reduce stress and anxiety with extraordinary results (Ganong, 1999). In addition, music therapy for 7 consecutive days influenced blood pressure changes in elderly patients with hypertension (Nafilasari, 2013).

When the music is heard and received by the ear, it will be forwarded to the limbic cortex, the hearing path proceeds to the hypoparacus, and forward the musical signal to the amygda which is the area of conscious behavior that works on the subconscious level, the signal is then applied to the hypothalamus. The hypothalamus is the area of partially regulating the vegetative function and endocrine function of the body, as do many aspects of emotional behavior, the auditory path is passed to the reticular formation as the impulse distributor to the autonomous fiber. Nerve fibers have two systems of sympathetic nerves and sympathetic nerves. Both of these nerves can affect the contraction and relaxation of organs. Relaxation can stimulate the center of the sense of reward so that the emergence of tranquility and eliminate anxiety (Ganong, 1999).

The music stimulus also sends a message to the hypothalamus that further reduces the secretion of neuropeptide and then proceeds to the autonomic nervous system, the decrease of neuropeptide secretion causes the parasympathetic nervous system to make a relaxed condition. This condition also causes decrease of catecholamine release by the adrenal medulla resulting in stability of pulse frequency, pressure blood, blood vessel obstruction and oxygen consumption by the body (Chiu & Kumar, 2003).

This study also revealed that there was a significant effect of music therapy alone on blood pressure. This is in line with the study stated that music therapy influences blood pressure of patients, including in pre-hemodialysis patients. Someone who listens to the appropriate music then his pulse and blood pressure can decrease steadily, brain waves slow down, breathing slows down, and muscle muscles become relaxed (Sarayar, Mulyadi, & Palandeng, 2013).

Music can reduce stress. Patients treated with music will appear more relaxed and calmer. Relaxation effects obtained through music therapy will affect the stability and decrease in blood pressure, pulse and breathing (Kemper & Danhauer, 2005). However, the results of this study revealed that music therapy alone had no effect on heart rate, which is in contrast with previous study said that music can stimulate the central nervous system to produce endorphins, which can lower blood pressure and heart rate and create a pleasant atmosphere so as to minimize fear and anxiety.

**Effect of combination therapy (music-aromatherapy therapy) on anxiety and non-invasive hemodynamics**

Findings of this study revealed that there was a significant effect of combination therapy (music-aromatherapy) on anxiety, diastolic blood pressure and heart rate. There was no effect on systolic blood pressure. This study specifically provides the new knowledge of this combination had a greater effect than the music therapy alone on anxiety and non-invasive hemodynamics.

The sense of smell and hearing in music and aromatherapy affect the limbic system and hypothalamus on brain, limbic system functions can change mood, memory and memory emotions, make more relaxation, and sleepy, while the hypothalamus that has hormones and neurochemical release can affect the vital sign and other organs (Ganong, 1999). Mechanism through smell and hearing is much faster because both have direct contact with parts of the brain in charge of stimulating the formation of effects caused by music therapy and aromatherapy. Received messages are then converted into actions in the form of release of electrochemical compounds that cause euphoric, relaxed or sedative, this is what makes combination therapy can be more influential on decreased
anxiety and stability of blood pressure and heart rate (Ganong, 1999).

During music therapy, aromatherapy is inhaled; the volatile molecules of the oil are carried by air to the roof of the nose where the soft cilia arise from the receptor cells. When the molecules attach to the hairs, an electrochemical message will be transmitted through the sphere and olfactory into the limbic system. This will stimulate the memory and emotional response. The hypothalamus acts as a relay and regulatory, generating messages to the brain and other parts of the body. Received messages are then converted into actions in the form of release of electrochemical compounds that cause euphoria, relax or sedative. The limbic cortex is primarily used for emotional expression systems. Thus this combination proven to be effective on anxiety and non-invasive hemodynamic (Arwani & Hartono, 2012).

CONCLUSION

There was a significant effect of combination therapy (music-aromatherapy) on anxiety, diastolic blood pressure and heart rate. There was no effect on systolic blood pressure. This therapy can be used as an alternative in nursing interventions, and can be used as inputs to develop standard of operational procedure for anxiety and non-invasive hemodynamic stability. This research can also be used as the base of research development on non-pharmacology therapy for patients in the intensive care unit. In addition, the results of this study can serve as a frame of reference for further research on the provision of music therapy and aromatherapy to overcome other health problems, combining between music therapy and aromatherapy with other interventions.

Declaration of Conflicting Interests
None declared.

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Author Contribution
All authors contributed equally in this study.

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EFFECT OF MINDFULNESS INTERVENTION ON THE INTENSITY OF PAIN IN NASOPHARYNGEAL CANCER PATIENTS UNDERGOING RADIATION TREATMENT

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Abstract
Background: Physical responses that occur in patients with nasopharyngeal cancer are the emergence of pain due to the effects of treatment. The problem of pain in these patients at the stage of treatment remains critical to solve because it can cause comorbidity, psychological trauma and mortality. Mindfulness intervention is considered useful in transforming consciousness into the stage of acceptance.
Objective: This study aims to determine the effect of mindfulness intervention on the intensity of pain in nasopharyngeal cancer patients undergoing radiation treatment.
Methods: This was a quasi-experimental study with pretest posttest control group design. Thirty patients were selected using consecutive sampling, which divided into experiment and control group. Visual Analogue Scale (VAS) was used to measure pain. Each respondent received mindfulness intervention for six sessions, divided into three meetings. Paired t-test was used for data analysis.
Results: The results showed a significant reduction of pain from 4.12 (moderate pain) to 3.06 (mild pain) in the experiment group. There was a significant difference in pain level before and after mindfulness intervention (p= 0.001).
Conclusion: Mindfulness is effective in reducing pain intensity level in nasopharyngeal cancer patients undergoing radiation therapy.

Keywords: pain; anxiety; mindfulness; nasopharyngeal cancer

INTRODUCTION

Prognosis, symptoms of disease, and effect of treatment on cancer patients will give different physical and psychological responses to each individual. Physical response that often occurs in cancer patients is the onset of pain (Carr et al., 2002). In patients with advanced stage of nasopharyngeal cancer with radiation therapy, pain primarily occurs during treatment and may last for several months even years after treatment is completed (Lu, Cooper, & Lee, 2010; Wallace, 2008). Thirty percent of nasopharyngeal cancer patients will complain of pain during their diagnosis and will increase to 65-85% in its development and treatment (Haisfield-Wolfe, 2009). The effect of radiation therapy on nasopharyngeal cancer patients is a major cause of pain that often...
causes different psychological distress from patients with other types of cancer. It is stated functional impairment due to radiotherapy such as respiratory disorders, inability to communicate, swallowing disorders, and physical appearance will cause emotional trauma. This physical impact can last up to 3 months after completion of treatment (Haisfield-Wolfe, 2009; Lu et al., 2010).

Psychological management in nasopharyngeal cancer patients during treatment is very important, because psychological distress can lead to comorbidity and trauma. Comorbidities in patients with nasopharyngeal cancer may decrease survival rates and increase mortality risk. Studies show that 40% of nasopharyngeal cancer patients die after 23 months due to comorbidity (Toth, 2009). The results of the study showed that unpleasant emotional coping would appear in patients with nasopharyngeal cancer at the beginning of the diagnosis and would increase especially during treatment, then decrease in 3 months post-treatment with emotional coping include self-blame, wishful thinking and avoidance (Elani & Allison, 2011).

To avoid maladaptive coping at this stage of treatment, a nurse should introduce an effective coping strategy in patients with nasopharyngeal cancer, so that the patient can adapt and accept his/her current condition. Health education and accommodative coping strategies can reduce pain and improve the quality of life of nasopharyngeal cancer patients (Haisfield-Wolfe, 2009).

Pain management must be integrated both physically, psychologically, socially and spiritually. Forty-three cancer patients with pain and anxiety cannot be managed only pharmacologically with analgesics and antidepressants (Mystakidou et al., 2012). Research on pain in cancer patients suggests that combining interventions between analgesics and psychological multi-component therapy can make patients more stable in controlling anxiety and depression associated with pain compared with patients who have only medication alone (Porcelli, Tulipani, Di Micco, Spedicato, & Maiello, 2011). In systematic review it has been identified that psychotherapy therapy such as Mindfulness Based Intervention gives benefit to mamoe cancer patient to decrease pain, fear of recurrence and improve physical health and quality of life (Johnson, 2011).

Mindfulness method can accommodate aspect of individual spirituality toward acceptance stage. The study of lung cancer patients' survivors showed that spirituality had an effect on lymphocyte-mediated biomarkers that could increase disease response rates for treatment, a 3-year survival increase, and an average increase in post-chemotherapy lymphocyte count (Kharitonov, 2012).

In contrast to other psychotherapy, the practice of mindfulness meditation is done with full awareness, which aims to realize who we are. Being aware of yourself is related to the ability / spirit to recognize and accept yourself and the conditions that are happening today. Meditation is the stage of acceptance and not judgment (Kharitonov, 2012). When mindful conditions are achieved, attention will not be focused on the past or the future, the individual will not judge or deny what is happening today and prove to be very effective in reducing psychopathology. Practicing mindfulness can be done in various conditions and daily situations such as when working, with partners, and when we own. Mindfulness aims to transform consciousness and integrate mind, body, and soul (Prabowo, 2012). It is this self-consciousness that helps the individual toward the acceptance stage as an effective coping strategy of adaptive conditioning (Antoni, 2013). The purpose of this study was to look at the effect of mindfulness on the intensity of pain in nasopharyngeal cancer patients during radiation therapy.

METHODS

Research design
This was a quasi-experimental study with pretest posttest control group design.
**Target population and sample**

The population of the study was all patients with advanced stage nasopharyngeal cancer in radiotherapy ward of the General Hospital of Kariadi Medical Center Semarang. Thirty patients were selected using consecutive sampling, which divided into experiment and control group with inclusion criteria: adult patients aged 20-70 years, received radiation treatment, experienced pain, could do verbal communication, no hearing loss and no mental disorders.

**Instrument**

Visual Analogue Scale (VAS) was used to measure pain. VAS was first introduced by Hayes and Patterson in 1921 to assess subjectively the pain of the individual (Klimek et al., 2017). VAS is a horizontal line from scale 0-10 where respondents are asked to assess the pain based on numerical scoring scale from number 0 which means no pain until the number 10 which means the peak of the pain. The validity a VAS in pain in adults was 0.29 to 0.56 and the reliability was \( r = 0.80 \), which means that the tool was valid and reliable to measure pain in cancer patients (Jensen, 2003). The measurement of pain intensity in the respondents was done before and after intervention.

**Intervention**

Mindfulness interventions were administered for 6 sessions in the experiment group, while the control group only got standard service in the hospital, which was radiation and pharmacological therapy. Mindfulness exercises were performed by a certified therapist in this intervention, assisted by 2 certified research assistants. Mindfulness exercise was done in 3 meetings for 3 days. The first day meeting was introductory sessions and explorations of experiences with targeted respondents to express their experiences about disease complaints and perceived pain responses. The second- and third-day meetings were mindfulness sensory and emotional exercises with body scanning and self-conscious mindfulness exercises, with the target respondent realizing the sensory, emotional and current feelings and being able to receive them well. On the first day of the meeting, respondents were given a mindfulness exercise leaflet to be practiced at home.

**Statistical analysis**

Data were in normal distribution. Paired t-test was used to know the differences in pain intensity before and after the implementation of mindfulness.

**RESULTS**

Of the 34 respondents who met the inclusion criteria and stated that they were willing to participate in the training, one respondent in the experiment group did not follow the full training session, so they were excluded from the sample.

Based on the demographic data it was found that the gender of most respondents was male, 12 males in the experiment group (75%) and 11 males in the control group (64.7%). Majority of respondents were in advanced stage of nasopharyngeal cancer. The average age of respondents in the experiment group was 46.4 years and the control group was 48.9 years. The average number of radiations received by respondents was 16 times. The characteristics of respondents were shown in the following tables 1 and 2.

Table 3 shows that before intervention the mean intensity of respondents was at the moderate pain level, which VAS value of pain intensity in the experiment group was 4.12 in the experiment group, and 4.24 in the control group. After given Mindfulness intervention, there was a reduction of pain level in the experiment group to 3.06, while pain level in the control group was increased to 4.35.
Table 1 Characteristics of the respondents based on gender, stadium of cancer and social support

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experiment group (N = 16)</th>
<th>Control group (N=17)</th>
<th>Total (N=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>12 (75%)</td>
<td>11 (64.7%)</td>
<td>23 (69.7%)</td>
</tr>
<tr>
<td>Female</td>
<td>4 (25%)</td>
<td>6 (35.3%)</td>
<td>10 (30.3%)</td>
</tr>
<tr>
<td>Stadium of Cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stadium 3</td>
<td>14 (87.5%)</td>
<td>15 (88.2%)</td>
<td>29 (87.9%)</td>
</tr>
<tr>
<td>Stadium 4</td>
<td>2 (12.5%)</td>
<td>2 (11.8%)</td>
<td>4 (12.1%)</td>
</tr>
<tr>
<td>Social Support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15 (93.8%)</td>
<td>16 (94.1%)</td>
<td>31 (93.9%)</td>
</tr>
<tr>
<td>No</td>
<td>1 (6.2%)</td>
<td>1 (5.9%)</td>
<td>2 (0.1%)</td>
</tr>
</tbody>
</table>

Table 2 Characteristics of respondents based on age and the number of radiations received

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min-Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>46.4</td>
<td>12.6</td>
<td>24-67</td>
<td>40.22-52.66</td>
</tr>
<tr>
<td>Control group</td>
<td>48.9</td>
<td>11.4</td>
<td>24-62</td>
<td>43.06-54.82</td>
</tr>
<tr>
<td>Number of radiations received</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>17</td>
<td>8.7</td>
<td>2-31</td>
<td>12.67-21.96</td>
</tr>
<tr>
<td>Control group</td>
<td>15</td>
<td>6.9</td>
<td>1-26</td>
<td>11.08-18.21</td>
</tr>
</tbody>
</table>

Table 3 Pain intensity before and after given Mindfulness intervention

<table>
<thead>
<tr>
<th>Pain intensity</th>
<th>Mean</th>
<th>SD</th>
<th>Min-Max</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>4.12</td>
<td>0.957</td>
<td>2-6</td>
<td>3.61-4.64</td>
<td>0.088</td>
</tr>
<tr>
<td>Control group</td>
<td>4.24</td>
<td>1.348</td>
<td>2-6</td>
<td>3.54-4.93</td>
<td>0.101</td>
</tr>
<tr>
<td>After intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>3.06</td>
<td>0.854</td>
<td>2-5</td>
<td>2.61-3.52</td>
<td>0.019</td>
</tr>
<tr>
<td>Control group</td>
<td>4.35</td>
<td>1.455</td>
<td>2-7</td>
<td>3.60-5.16</td>
<td>0.225</td>
</tr>
</tbody>
</table>

Table 4 Relationship of age, gender, number of radiations received, social support, and pain intensity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sig. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.596</td>
</tr>
<tr>
<td>Gender</td>
<td>0.354</td>
</tr>
<tr>
<td>Number of radiations received</td>
<td>0.11</td>
</tr>
<tr>
<td>Social support</td>
<td>0.507</td>
</tr>
</tbody>
</table>

Table 4 shows that there were no significant relationships between age, gender, number of radiations received, social support with pain intensity with p-value >0.05. While The results of paired t-test as shown in the table 5 indicated that there was a significant effect of mindfulness intervention on pain intensity with p-value 0.001 (<0.05), while there was no effect of intervention in the control group on pain intensity.
DISCUSSION

The intensity of pain experienced by respondents prior to intervention in the experiment group and control group was on the level of moderate pain. Pain associated with cancer according to some studies on a moderate to severe scale, particularly occurring during the treatment period, which is due to the effects of treatment and the stage of cancer itself (Carr et al., 2002; Mystakidou et al., 2012; Tang, Luo, Rong, Shi, & Peng, 2012). Thirty percent of nasopharyngeal cancer patients will complain of pain when they are diagnosed and will increase to 65-85% in development and treatment (Elani & Allison, 2011).

Based on respondents’ statements, it was found that the intensity of perceived pain raised and increased during radiation. The perceived pain response due to functional impairment due to radiopaque effects breathing difficulties, swallowing disorders and mucositis in the mouth. In accordance with previous research that the pain in patients with nasopharyngeal cancer during radiation treatment is mainly due to the side effects of the treatment, which will be felt by patients both acutely and chronically. These side effects are influenced by several things one of which is the location and the radiation dose that has been given (Haisfield-Wolfe, 2009). Pain due to radiation mainly occurs due to cell damage to salivary glands. At low doses (<30 Gy) or 15 times the damage radiation has not occurred widely. Damage to the salivary glands that cause difficulty swallowing and mucositis will occur on day 21 - 35 radiation.

The results showed that the average amount of radiation received by the respondents in the experiment group was more than the control group but the pain response was greater in the experiment group compared with the control group, which was indicated by the mean value of VAS. These results indicated that the pain response was influenced by the subjective perception of individual pain.

From the results of the study showed that there was no correlation between the characteristics of respondents with the intensity of pain perceived. Most respondents were young adult age with male gender. Some pain management experts claimed that the pain response in male adult patients will fully respond to pain compared with elderly patients (Stuart, 2014). The results indicated that the intensity of the respondent’s pain was still moderate pain; it also shows that the pain response was mainly influenced by the perception of pain of each individual.

In this study, social support is defined as the absence of a family that accompanies patients during the treatment process (patients away from the family). Previous research has shown that the social support of families in radiation patients positively correlated with overall short-term adjustment (r = 0.18, P <0.05). The overall short term adjustment referred to here was the presence of physical and psychological disorders that cause and affect anxiety, depression and perception of pain (Ma, 1998). In this study, most respondents got social support from their families, possibly because of this social support cause a sense of happiness that affects neuroendocrine response with increased endorphin that may decrease the response to pain.

Provision of mindfulness is one factor that greatly affects the decrease in the average

Table 5 Effect of Mindfulness intervention on pain intensity in patients with Nasopharyngeal Cancer using Paired t-test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>95% CI</th>
<th>Sig. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain intensity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>1.062</td>
<td>3.93</td>
<td>0.607-1.518</td>
<td>0.001</td>
</tr>
<tr>
<td>Control group</td>
<td>-0.118</td>
<td>0.60</td>
<td>-0.426-0.191</td>
<td>0.431</td>
</tr>
</tbody>
</table>
level of pain in the experiment group compared to the control group. In the experiment group, the respondent's pain was obtained by integrative management, medically (with analgesic NSAID) and psychological (with psychotherapy of mindfulness), while the control group only received medical therapy. Porcelli et al suggests that pain management in cancer patients that combine analgesics and psychological multipart therapy may make patients more stable in controlling anxiety and pain-related depression than patients who have only medication alone (Porcelli et al., 2011). Xinghua Liu et al states that after mindfulness on the respondent with pain stimulus cold pressure treatment increased the tolerance of pain (p <0.01) and decreased the level of pain (p <0.05) (Liu, Wang, Chang, Chen, & Si, 2013).

In this study, a mindfulness procedure that involves the exploration of experience, body perception and self-conscious mindfulness which is a combination of self-inventory and self-reflection coping strategies aimed at decreasing emotional reactions and enhancing cognitive judgment positively (changing perceptions) so as to foster acceptance. Awareness to accept is what is able to reduce the intensity of pain and foster confidence and motivation to perform treatment.

Limitations of the study
The measurement of the intensity of pain in respondents was not done by researchers in every meeting, so researchers could not assess the difference of pain at the first day of meeting until the third day.

CONCLUSION
It is concluded that the provision of mindfulness interventions has a significant effect in reducing the intensity of pain in patients with nasopharyngeal cancer undergoing radiation therapy. Mindfulness intervention can be performed as a nursing intervention for self-management of patients in palliative care. It is necessary to develop further research with larger number of samples and varied variables, so that it can enrich science in the field of nursing.

Declaration of Conflicting Interests
None declared.

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Author Contribution
All authors contributed equally in this study.

References


ABORTION AND ITS INFLUENCING FACTORS: A QUALITATIVE STUDY IN THE DETENTION CENTER

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Abstract
Objective: This study was to explore the actions and factors causing abortion, killing and disposal of babies qualitatively in the detention center of Class II B, Raba Bima, West Nusa Tenggara, Indonesia.
Methods: This was a descriptive qualitative study with six respondents who were purposively selected. Content analysis was used for data analysis. Member-checking and crosscheck triangulation were performed to ensure the trustworthiness of the data.
Results: Findings emerged from data, namely: factors that cause adolescent abortion, killing and disposal of baby (internal factors, family factors and partner factors), the way to do those actions (to take medicine, by the help of health workers, shaman and the nearest person), and behavior after doing abortion, killing and disposal of baby.
Conclusion: Understanding the factors affecting abortion, killing and disposal of baby among adolescents and the way they did them as well as their behavior after all of these activities might help health practitioners to find the strategies to reduce the incidence of unwanted pregnancy which lead to abortion, killing and infant disposal.
Keywords: abortion; killing and disposal of baby; adolescent

INTRODUCTION

In the era of globalization, science and technology is growing very rapidly. The advance of technology makes people more accessible to the windows of the world by phone, television, electronic media and the Internet. This development can have both positive and negative impacts (Soejoeti, 2001). The use of appropriate technology will be able to increase the society’s insight progressively. However, errors in the utilization of this technology affect the potential for negative and criminal acts, for example sites about sex, porn pictures and videos. Western culture has entered Indonesia freely through foreign tourists who come to Indonesia (Musthofa & Winarti, 2010).
feeling of love (Widyastuti, Rahmawati, & Purnamaningrum, 2009).

Provision of facilities such as smartphone and laptops / notebooks without good supervision and guidance makes teens more accessible to porn sites. The results of a previous study of 200 teenagers who had had sex outside of marriage revealed that 8 teenagers among them had had sex outside of marriage at age <16 years, 64 teenagers did it at the age of 16-18 years and 128 teenagers at age >18 years. This shows how apprehensive the condition of the next generation of the nation, which the feeling of shame culture is no longer upheld (Suryoputro, Ford, & Shaluhiyah, 2006). The behavior of free sex among teenagers has been very disturbing to the public. Free sex generally leads to unwanted pregnancies. The moral crisis makes many teens pregnant without being married, who then attempt to do abortion.

Every year there are 2.6 million cases of abortion. A total of 700,000 abortion are teenagers or girls under 20 years old, of which 11.13% of abortion cases of unwanted pregnancy cases. The increase of free sex culture in Indonesia has poisoned the public, especially the younger generation, with high rate of sexual violence and pregnancy outside of marriage (Widyastuti et al., 2009).

In some cases, many of the sex offenders kill the baby they have born and throw or bury the baby when the abortion is unsuccessfully implemented. This is recorded in the database of the police of Bima City Indonesia that revealed cases of murder, infant disposal and infant planting period on April to September 2015, which recorded as many as 3 cases that have been completed in the court. While in Bima regency also has the same cases (4 cases) in the period of June to December 2015, and at the beginning of 2016 there was a case of baby disposal at Panda Village of Bima District. Many more cases that are probably have not been revealed (Polres BIMA, 2015).

Based on interview in the preliminary study in the citizens in October 2015 revealed that many teenage girls who had free sex behavior were pregnant and did the abortions, especially who lived in an apartment. Thus, the purpose of this study was to explore the actions and factors causing abortion, killing and disposal of babies qualitatively in the detention center of Class II B, Raba Bima, West Nusa Tenggara, Indonesia.

**METHODS**

**Study design**

This was a descriptive qualitative study to explore the actions and factors causing abortion, killing and disposal of the baby.

**Setting**

This research was conducted in the Detention Center of Class II B, Raba Bima, West Nusa Tenggara, Indonesia, from July to November 2016.

**Sample**

Six respondents were purposively selected as they had more information regarding abortion, disposal and infanticide. The selection of the respondents was conducted by finding key informants in advance of abortion actors who had been subject to legal sanctions (prisons), who were still serving punishment or post-punishment. Besides, to achieve saturation of data, researchers looked for informants who were not subject to legal sanctions, because they did not get caught doing the act of abortion. For research subjects who had been subject to legal sanction and subject post-punishment, the researchers obtained direct data from the Detention Center of Class II B Raba Bima, while for the subject of research which was not subject to sanction, the researchers got the information from the condemned perpetrator, which was colleague friends and roommate.

**Data collection**

Data were collected by the researchers themselves assisted by three lecturers who had received training and one lecturer.
assistant using in-depth interviews in the private room, and all data were captured and recorded using voice recorder. Open questions were used and followed until data saturated. Interviews for informants outside the detention facility, the research team made informal contacts via cell phone first to request approval of the interview. Furthermore, after obtaining the consent, the researchers then met in the place that had been determined by the informants.

Data analysis
Data were analyzed in three steps: preparing transcription, coding and categorizing and drawing conclusions. Content analysis was used. Member-checking and cross-check triangulation were performed to ensure the trustworthiness of the data.

Ethical consideration
This study has been approved by the Research Ethics Commission with approval number 115 / UN 18.8 / ETIK / 2016, and study permission from the Head of Class II Class B Raba Bima, on the recommendation of permission from the Ministry of Law and Human Rights of the Republic of Indonesia, West Nusa Tenggara Regional Office. The researchers confirmed that each respondent has obtained an appropriate informed consent.

RESULTS

Characteristics of Participants
The characteristics of 6 respondents were: (1) Informant "1" is currently 19 years old, unmarried, a student at one private university in Bima, (2) Informant "2" is currently 23 years old, undergoing the punishment process in second class B Raba Bima. (3) Informant "3" is currently 23 years old, working as a shopkeeper, (4) Informant "4" is currently 22 years old, married, has served his sentence., (5) Instrument “5” is a college friend of "N" currently 23 years old, student and unmarried, and the informant "6", 21 years, is currently serving a sentence.

Table 1
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
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</thead>
<tbody>
<tr>
<td>Age at first sex</td>
<td></td>
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</tr>
<tr>
<td>&lt;20 years old</td>
<td>1</td>
<td>16.6</td>
</tr>
<tr>
<td>&gt;20 years old</td>
<td>5</td>
<td>83.3</td>
</tr>
<tr>
<td>Previous educational background</td>
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<td></td>
</tr>
<tr>
<td>Senior High School</td>
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<td>100</td>
</tr>
<tr>
<td>Frequency of having sex</td>
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<td></td>
</tr>
<tr>
<td>1-5 times</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Number of sex partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>100</td>
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<tr>
<td>Duration of dating to decide having sex</td>
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</tr>
<tr>
<td>8-12 months</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>&gt;1 year</td>
<td>3</td>
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</tr>
<tr>
<td>Age of doing abortion</td>
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<tr>
<td>&lt;20 years old</td>
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<td>16.6</td>
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<tr>
<td>&gt;20 years old</td>
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<td>83.4</td>
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<tr>
<td>Gestational age</td>
<td></td>
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<tr>
<td>2-4 months</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>&gt;4 months</td>
<td>3</td>
<td>50</td>
</tr>
</tbody>
</table>

Factors causing abortion, killing and infant disposal
The results of interviews that the factors causing adolescents to perform the act of abortion of killing and disposal of baby were as the following:

Internal factor
The internal factor refers to the conditional factor in which the perpetrator was not ready to marry, and the partner did not want to be responsible. This is explained in the following statements:

Table 2
<table>
<thead>
<tr>
<th>Informant</th>
<th>Age</th>
<th>Relationship with informant</th>
<th>Education</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OI</td>
<td>30</td>
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<td>Junior High School</td>
<td>Housewife</td>
</tr>
<tr>
<td>OS</td>
<td>33</td>
<td>Mother of Informant “2”</td>
<td>Elementary school</td>
<td>Farm laborer</td>
</tr>
<tr>
<td>OA</td>
<td>28</td>
<td>Mother of informant “4”</td>
<td>Junior high school</td>
<td>Farm laborer</td>
</tr>
<tr>
<td>Bd</td>
<td>50</td>
<td>A midwife who helped doing abortion of informant “6”</td>
<td>Diploma III</td>
<td>Civil servant</td>
</tr>
<tr>
<td>Db.</td>
<td>45</td>
<td>A shaman who helped informant “2”</td>
<td>Elementary school</td>
<td>Housewife</td>
</tr>
</tbody>
</table>
"...My boyfriend and I were not yet ready to get married..." (Informant 2)
"...I did the abortion because my boyfriend ran from responsibility, he did not want to responsible..." (Informant 1).
"...I also did not want to have children; I still want to study..." (informant 4)

Family factor
Family supports the informants to have abortions, murder and disposal of babies due to the family embarrassment if their children got pregnant. In addition, parents did not agree if their children got married early. This is explained in the following statements:
"...When my parents knew I was pregnant, then they were surprised and I also wanted to continue studying in the college, my parents thought it was better to do abortion only, instead of getting married early. It was ashamed for the family..."(Informant 2)
"...My parents did not like my boyfriend because he was unemployed, while I was still a student..."(Informant 6)

Partner factor
A partner is one influencing factor to have an abortion, killing and disposal of baby. Those who have no intention to do those forbidden activities, but with the influence of a partner/ couple, it may be happening. This is explaining in the following statements:
"... She actually did not want an abortion and marriage, but I postpone to do that..." (Informant 2)
"...He said that he would marry me, but until waiting for quite long time, there was no certain answer, then we broke up..." (Informant 4)
"...I did the act of abortion because I was not ready to have children, and I was not married, I did not want people knew if I was pregnant but unmarried..." (Informant 3)

How to do an abortion
There were several ways to do abortion found from the data.

Taking medication
Taking medication is one way to do abortion. This is explained in the following statements:
"...Initially I had an abortion by experimenting with a medicine for one time, which is instantly miscarriage by taking gastrum medication..." (Informant1)
"...The time when I knew I was pregnant, I wasn’t thinking to go to midwives for abortion, only for drinking pills but there was no effect. When my parents knew that I was pregnant, they felt embarrassed then they wanted me to do abortion..." (Informant 2)

"...At that time my boyfriend came to me and gave me the medicine that he bought at the pharmacy. He asked me to take the medicine, and I immediately took the medicine in front of him. And it turned out after taking the drug, I was having a miscarriage ..."(informant 5)

Health worker assistance
With the help of health worker assistance, particularly midwives, is one of the methods to do abortion. This is explained in the following statements:
"...Well at that time, I saw it first where the midwife stayed, where her work, and in which village. In addition, I had a friend there, so I knew..."(Informant 4)
"...I was asked to do abortion by my parent and brought me to midwife. It had been 4 times doing that but no effect..."(Informant 2)

Shaman help
Some people still believe with the shaman as a part of the tradition. And the shaman can also help doing abortion. This is explained in the following statement:
"...My boyfriend brought me to the shaman (female), took me into a room and I was so afraid during that time..." (Informant 5)

The nearest person helps
The informants confessed at the time of the abortion there were several people who helped doing abortion such as boyfriend. This is explained in the following statement:
"...My stomach was being pushed by my boyfriend so hard, and put something inside into my vagina, which was so painful..." (Informant 6)
"...My boyfriend helped me to do abortion by drinking gastrum and energy drink..." (Informant 1)

Adolescent behavior after abortion, killing and baby disposal
The informants stated that they did feel regret after doing an abortion, the killing and disposal of the baby. Sometimes they felt pain but still having sex with the couple without feeling afraid to get pregnant again. This is explained in the following statement:
"...After the abortion I felt regret, because at that time I was afraid and pain. There was no sense of weakness because of the fear, immediately just do abortion spontaneously..." (Informant 1).
"...After doing that, there was still a sense of regret, and I often feel pain inside my uterus, which probably because it was not handled well..."(Informant 2)
“...Yes, after my abortion, I still have sex only occasionally because my boyfriend often back to his village, so we rarely see too...” (Informant 3)

“...I will not do it again; some people were being reported and caught...” (Informant 6)

DISCUSSION

Factors causing abortion, killing and infant disposal

Various reasons for abortion conducted by the informants, among others, (1) the internal factors of the perpetrators who were not ready to get married, have planned to abortion if getting pregnant, afraid to get negative stigma in society, afraid of ostracized and no plan to go to health workers; (2) the family factor that the respondents were afraid of parents and did not want to make family embarrassed, and parents willingness for abortion due to disagreement with the couple and they wanted their child to continue education, besides, they were still young and did not work yet; (3) the partner factor was also the reason that the couple was not ready to have greater responsibilities associated with marriage and have children for several reasons such as not yet ready to marry, husband of the other woman, and having more than one sexual partner.

The internal factors are behaviors that arise from within an individual, in the sense that abortion behavior arises because of the pregnant woman is not possible to give birth because it can cause death (Hastuti, 2008). According to study, the bio-psychosocial condition of students experiencing a transition period makes students vulnerable to temptation, so that many students are trapped into sexually active marriage (Andayani & Setiawan, 2005). It leads to a consequence that one day there will be an unwanted pregnancy. Students who experience a pregnancy without being married will experience a dilemma in making a decision. The decision process is faced with two considerations, namely internal considerations and external considerations. As revealed by study that internal considerations include a commitment with a partner to establish a long-term relationship in a marriage, attitudes and perceptions of the embryo, subjective perceptions of psychological and economical readiness to marry, and attitude to abortion (Andayani & Setiawan, 2005). Whereas external factors include attitudes and acceptance of parents of partners, community appraisal, normative and ethical values of religious institutions, the possible changes in the implementation of the decision-making. Thus, it can be concluded that the existence of high sexual behavior leads to sexual intercourse that will encourage someone to have a permissive attitude to abortion (Andayani & Setiawan, 2005).

This is also in line with the results of the research of Made Kurnia W stated that one of the factors that support teenagers choosing an abortion is because they do not want to a single parent (Giri, 2013). When adolescents experience unwanted pregnancy, they are faced with a very difficult choice because they are still young to be a parent and have a high risk of having a child, so 37% of them do not want a baby or 35% have an abortion and only 14% want to continue their pregnancy. A very important factor that affects teenagers in making abortion decisions is parents, especially mothers and their spouses, high socioeconomic backgrounds and the desire to continue their studies. In addition, study suggests other factors that influence a teen's positive attitude towards abortion are knowledge of the risks of abortion, information, socio-economic, cultural, and religion. While adolescents who have negative attitudes toward abortion are influenced by fear because of immature, not ready to marry, embarrassed with the surrounding community, fear of being expelled from school, feeling unable to continue school, not daring to play with peers, cannot continue school, and unclear future (Zulhidayat, 2016).

Based on three high school students in Belik District who have done abortion stated that each of them has done abortion on the basis of fear when parents know, shame on friends or get sanction from the school if they are found...
pregnant. The way to do abortion is by drinking herbs, bleaching medicines or by abdominal massage with a shaman. WHO indicated that abortion perpetrators know that abortion is a dangerous, causing illness, fetal disability if abortion is unsuccessful and even death, but they still continue abortion because it considers as a solution (World Health Organization, 2011). The reason women make an abortion attempt to end her pregnancy is unprepared for shyness, job reason, unmarried, family economic condition, number of children, and too close pregnancy distance.

Another factor is the family factor, particularly the role of parents. The decision of illegal abortion undertaken by teenagers is also motivated by family social control. In Bima regency, pregnancy cases in adolescents that led to the incidence of abortion based on the results of in-depth interviews obtained that, teenagers did when his parents were not at home, when parents had to work in fields far from home, thus there was no such a control or observation to the children. This is in line with the results of the study stated that the poor relationship and lack of communication between adolescents and family can lead to a lack of family social control that causes teenagers to think they are free to do anything, premarital sex and illegal abortion (Hertanti, 2013).

Similarly, it is said that the reasons why these citizens act are because of the historical events (past) that affect their character, and understand the actions of the perpetrators who live in the present. In addition, it is found that mobility and high activity in urban areas cause the parents have no attention to their children well. For example, working hours that require parents to go home in the afternoon, coupled with the meeting and work overtime that adds working hours, so when it came to home, the parents hardly have time for their children. The parents who do not work is also not necessarily to be close to his/her children, because the time spent by children more with their friends than with family.

How to get an abortion
Informants confessed to do abortion, killing and disposing of babies in several ways with the help of the persons such as partner and friend (to buy medicine), midwife (invasive abortion), and shaman (invasive abortion). The source of info to make an abortion effort is especially from close friends, while pharmacies and drug stores only to get drugs for abortion. Types of drugs used are in the form of traditional herbs (Mrica, Pineapple, Onion), Traditional Jamu (Kiranti, Em Capsules, Jamu Kates), alcohol, and unknown modern medicine.

The experience after doing successful abortion is mixed between sad, happy and relieved. When a woman experiences an unwanted pregnancy, the only escape route is to make an abortion effort, either by self or with the help of others. Some of them decide to end their pregnancy by seeking help that is not safe so that they experience serious complications or deaths due to being handled by an incompetent person or with equipment that does not meet the standards (Utama, 2014). However, one of the reasons women often seek abortion is that they have reached the desired number of children. In addition, many unmarried women have abortions because they want to continue their education before they get married. In one study it was found that only 4% of clients who had an abortion terminated their pregnancy due to reasons for maintaining their physical health (Buse, Martin-Hilber, Widyantoro, & Hawkes, 2006). One of the cases of abortion occurred in Cilacap was done by a specialist obstetrician as a suspect abortion perpetrator. He used to deal with patients who wanted to abort the unwanted pregnancy. There were 6 suspects who have been explored, one of them was a high school student, while the others were in charge of delivering and financing the abortion.

According to study, behaviors that occur in women who engage in premarital abortion behavior include being introvert and staying away from family and community environments, searching for abortion clinics,
seeking obstetric drugs, wearing looser clothing, jumping, drinking herbs, eating pineapple, going to shaman, taking gynecosid / Cytotec medicine (Utomo, Habsjah, & Hakim, 2001).

Every year in Indonesia, millions of women experience unplanned pregnancies, and most of them choose to terminating their pregnancies, although in reality abortion in general is illegal. As in other developing countries where there is stigma and severe restrictions on abortion, Indonesian women often seek help for abortion through non-medical personnel who use methods such as by drinking herbs that are harmful and perform massage. If the abortion attempt has not succeeded, the woman will then abort in the clinic (Sucayha, 2005).

Another study using in-depth interviews with 50 women about their experience of having an abortion stated, “first, my stomach was massaged, with a pressure that was not too strong until the massage was very hard and very painful. Then both my legs were bent and the shaman inserted his fingers into my vagina and scrapes the inside of the vagina. When the shaman took his hand out of my vagina, I felt something coming out of my vagina, and I felt very weak. An hour later, I was asked to take a potion and got a massage again. I shouted because I could not bear the deep pain, after 10 minutes, the shaman stopped doing massage and again I felt something coming out of my vagina”.

Another woman told about her friend said, "After drinking the concoction from the shaman, she felt very dizzy. Because of the unpredictable pain my best friend had to knock her head on the wall again and again. Then it got worse; my friend’s body instantly felt hot, his body temperature became very high, and after his stomach was massaged, the bleeding began to happen and the bleeding was not stopped. She was in pain and became more weak, and then my friend died (Utomo et al., 2001).

Adolescent Behavior After Abortion, Killing and Baby Disposal

The term of abortus is used to remove fetus before it can live outside the womb. The abortion is defined as the termination of pregnancy before the fetus reaches the age of less than 20 weeks (Saifuddin, Rachimhadhi, & Wiknjosastro, 2010). And the abortion is the termination of pregnancy before 28 weeks' gestation as a result of deliberate action and is acknowledged by the expectant mother or the abortion practitioner (i.e. the doctor, midwife and shaman) (Wiknjosastro, 2005).

Some participants said they had had a miscarriage, but there were also those who tried to abort the pregnancy. Participants revealed that after the conception was successfully released, they only drank the herbs, tied the belly with a long cloth, but no one checked into health workers after the conception out. Some participants also revealed that they did not succeed in getting the conception result. Factors that encourage abortion are: 1) social factor (especially for premarital pregnancy), issues if not abortion: (1) drop out of school, (2) shame to family and neighbors, (3) who will take care of baby (4) disconnected or interrupted future careers (Sarwono & Meinarno, 2009).

It is stated that the psychological condition of pre-abortion women is fear or anxiety, confusion, delaying problems, and need protection; while men, generally are not responsible, find no one to get information because unmarried sex or abortion is forbidden in society. When there is no time to delay, then seeking the most affordable solution is done, with reckless act with poor knowledge and very dangerous (Sarwono & Meinarno, 2009).

Another study indicated that the subjects who did the abortion tend to have a positive self-concept, which can be seen that the subject appears to solve the problem well, be reasonable when receiving praise from others, and being happy when praised. Subjects apologize if they make mistakes and correct errors that have been done. The subject does
not give excessive responses and be casual at the time of being criticized, getting attention from family and friends, it does not seem that the subject has an enemy, and the subject does not look shunned by others (Malanda, 2012).

Each behavior is based on many factors that determine it. Early marriage is also based on the motives and desires of individual. There are dynamics that can explain the early marriage behavior of the subject. Dynamics is a matter of offending psychological systems that emphasize motive problems, alluding to changes in things that cause change, offending inner psychology or systems that emphasize the change of unconscious behavioral causes. While it is also stated that the dynamics of psychology is a systematic theory of psychology that emphasizes control, desire, and motives either consciously or not as the main determinant of behavior. In this case, the psychological dynamics are crucial in determining and interpreting the various matters relating to the conditions of the early marriage actors, one of which feels very sorry to the way he/she has taken, feeling very guilty for having the embarrassment of both her/his name and families. The disappointment, sad and regretful were also showed because they had abortions, murder and exile of their own flesh and also regretted that their actions could have such devastating effects as they were imprisoned for what they did. But it does not last long because some of the perpetrators after they have an abortion of murder and the disposal of their baby they still have sex (Tanjug, Siddik, Hariman, & Koh, 2005).

CONCLUSION

It is concluded that the factors that cause abortion, killing and disposal of infants in adolescents were internal factor, family, and partner factor. The way of doing abortion was by the help of the persons such as partner and friend (to buy medicine), midwife (invasive abortion), and shaman (invasive abortion); with the types of drugs used were in the form of traditional herbs (Mrica, Pineapple, Onion), Traditional Jamu (Kiranti, Em Capsules, Jamu Kates), alcohol, and unknown modern medicine. Although some participants felt sad and regret after doing those forbidden activities, however they still had a sex with his/her partner like there was nothing happens. It is recommended for the health practitioners to reduce the incidence of abortion in adolescents by increasing more health education about adolescent health reproduction, and cooperate with local government, especially in Bima regency, and cross-sector in handling behavior disorder problem in adolescent.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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EFFECT OF BRAIN EXERCISE AND BENSON RELAXATION THERAPY ON DEPRESSION LEVEL IN THE ELDERLY IN THE ELDERLY SOCIAL SERVICE UNIT

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Abstract
Background: Depression is one of the most common psychosocial problems in the elderly. The incidence of depression in the elderly is greater in the elderly living in the social service unit than the elderly in the community. Management of depression in the elderly should be more emphasized on interventions that focus on the individual needs of the biopsychosocial and spiritual aspects. Brain gymnastics therapy and Benson relaxation are considered appropriate in decreasing depression.

Objective: This study was to determine the effect of brain exercise and Benson relaxation on the level of depression in elderly in the elderly social service unit.

Methods: This was a quasi-experimental study with pretest posttest control group design. Fifty-six elderly included in this study, which 28 assigned in the experiment and control group. The depression level was assessed using Geriatric Depression Scale (GDS). Wilcoxon and Mann-Whitney test were used for data analyses.

Results: The study showed that the mean GDS score in the experiment group before the intervention was 7.21, while the mean value of GDS in the control group was 6.64. The mean value of GDS in the experiment group after the intervention was 5.04 and the mean in control group was 6.18. There was a significant difference of GDS score between experiment and control group with p-value of 0.021 (<0.05).

Conclusion: There was a significant effect of brain gymnastics and Benson relaxation therapy in reducing depression in elderly. Brain gymnastics therapy and Benson relaxation can be one of independent nursing interventions as an effort to improve care for elderly groups.

Keywords: brain gymnastics; Benson relaxation; depression; GDS; social service unit

INTRODUCTION

By 2050 it is estimated that the number of people in the world with age more than 65 years two-fold increased and individuals with age 85 years and above 4-fold increased (Varcarolis, Carson, & Shoemaker, 2006). In Indonesia, according to data from the United Nations, it is estimated that there will be an increase in the number of elderly people up to 4 times in 35 years, from 1990 to 2025. By 2020, the estimated elderly population in
Indonesia reaches 25.5 millions of inhabitants (Soejono, 2009). The increase in the number of elderly at the moment is influenced by the increase of life expectancy due to the development of treatment and prevention of infection (Ganong, 2002), the improvement of health status as well as the improvement of welfare, the advancement of health services, the improvement of nutrition and the increased supervision of infectious diseases (Bandiyah, 2009; Nugroho, 2008).

This increasing number of elderly people is actually a challenge. This is because there are consequences of the need for the improvement of health and nursing services in dealing with degenerative health problems (World Health Organization, 2008). In addition, the elderly will have physical and psychosocial health problems (Bandiyah, 2009; Smeltzer et al., 2008).

The problem of physical health in the elderly comes with age and physiological changes. Indirectly, physiological changes will also affect the psychology, thus makes elderly as a vulnerable group (Potter & Perry, 2005). Psychosocial health problems in the elderly can be found in elderly living with family or not in the community, primary care facilities and inpatient services. Study states that the elderly who have mental disorders in community are about 12% and reach 30% to 50% in primary care and or inpatient facilities due to medical or physical illness, and > 70% in long-term care facilities (MOH, 2013).

Psychosocial health disorders that can occur in the elderly are aggression, anger, anxiety, mental disorder, rejection, dependence, fear, manipulation, fear, sadness and disappointment, and depression. Psychosocial health problems that often occur in the elderly, according to the national old people 'welfare council, are depression, dementia and anxiety (World Health Organization, 2008). The most common psychosocial health problem in the elderly is depression.

Percentage of depression increase with age of the individuals. The highest percentage of depression is over the age of 65 years (MOH, 2013). The prevalence of depression in the elderly generally ranges from 15% to 20% of the total elderly, which half of them is in the community and home care units (Kurlowicz & Greenberg, 2007).

Depression in the elderly has a fairly serious impact. Complications of depression experienced by the elderly are malnutrition resulting from decreased appetite, insomnia / sleep disorders, interpersonal disorders and destructive behaviors. In addition, patients with depression have a higher risk of suicide (Soejono, 2009). Of 33% elderly patients who have feelings of loneliness and helplessness try to commit suicide. The condition of loneliness is one of the signs of depression (Kurlowicz & Greenberg, 2007). Many elderly who live alone or do not live with family experience loneliness conditions. According to WHO, of the approximately 121 million elderly people in the depressed world show a suicide rate of 850,000 for each year (Stanley & Beare, 2007).

According to the study, that 40% of people with depression experience quality of life disorders (Kurlowicz & Greenberg, 2007). However, untreated depression in the elderly has significant clinical and social impacts such as decreased quality of life and increased dependence. Depression in the elderly also affects dementia, physical disability and despair (Depkes, 2003).

The form of treatment of depression in the elderly can be through psychological and pharmacological therapies that can be accompanied by a comprehensive interdisciplinary approach. Many therapies have been done in order to provide depression treatment to the elderly in the community setting. Therapy for depression in the elderly can be environmental therapy, family therapy and self-therapy (Stuart & Sundeen, 2007).

Self-therapy that can be given to the elderly is cognitive therapy, somatic therapy and alternative therapy or complementary therapies. Complementary and alternative
therapy known as Complementary and Alternative Medicine (CAM) is an intervention that focuses on the integrity of the individual including bio-psychosocial and spiritual aspects (Stuart & Sundeen, 2007), which can be given to those who have psychosocial health problems such as depression. Studies show that complementary and alternative therapies positively reduce depression. The complementary and alternative therapy models are herbal, acupuncture, massage and exercise and spiritual therapy (Dennison & Dennison, 2006; Stuart & Sundeen, 2007).

Brain gymnastics is one of exercises that can be used as a complementary and alternative therapy. Brain gymnastics can reduce the condition of depression because the basic principle of brain gymnastics is to train the brain to stay fit and prevent senility (Dennison & Dennison, 2006). Research showed significant results from the use of brain gymnastics therapy in combination with cognitive therapy in reducing depression in the elderly. This brain exercises strengthen the benefits of cognitive therapy in reducing depression (Depkes, 2003).

Brain gymnastics consists of 3 dimensions, which one of the dimensions that exist is the dimension of focusing, which can be applied in Benson relaxation. Thus, Benson relaxation can be done in conjunction with brain gymnastics or after the exertion of brain gymnastics therapy. Benson relaxation can be done by individuals independently and or with the assistance of nurse or caregiver. While Benson relaxation consists of 3 main activities namely focusing, deep breath and pray, which can be done continuously (Prasetyo, 2010).

Benson relaxation is an evaluation of the body mind or body intervention to reduce stress and anxiety (Deckro et al., 2002). Study showed an effect of Benson relaxation in decreasing anxiety in individuals with cervical cancer (Ma’rifah, Setyowati, & Ririn Isma Sundari, 2016). At this time many places or services are dedicated to provide care for the elderly. The social home or “Panti Sosial” is a comprehensive care-giving institution that not only provides physical and spiritual care, but also provides social and mental care. Panti sosial, with the guidance of the Ministry of Social Affairs of the Republic of Indonesia, provides social welfare services in the elderly including the provision of shelter, life insurance in which to eat and clothing, health care, recreation, and social, mental and spiritual guidance. The activities in this institution are divided into two, namely routine activities and leisure activities. Routine activities consist of eating, gymnastics, spiritual guidance, making handcraft and facilitating hobbies (World Health Organization, 2008).

From preliminary studies conducted by researchers, the elderly living in the social services unit received socialization, selection, contacts, contracts, motivational and social guidance, assessment, exercise, recreation and counseling. The program in the social service is designed for the elderly with the standard of health service, happy, confident, calm, peaceful and skilled. However, there is no specific activities focused on overcoming depression in the elderly.

The purpose of this study was to determine the effect of brain gymnastics therapy and Benson relaxation in reducing depression levels in the elderly.

**METHODS**

**Study design**
This was a quasi-experimental study with pretest posttest control group design. This research was conducted at the beginning of August 2017 until mid-September 2017 at the Wening Wardoyo Ungaran's elderly social services unit and the elderly social services unit of Pucang Gading Semarang.

**Sample**
Fifty-six samples included in this study, which were divided into experiment and control group. Each group consisted of 28 elderly who suffered from mild to moderate
depression. Patients with depression were purposively recruited using Geriatrics Depression Scale in the elderly. The inclusion criteria of the respondent were: (1) staying in the elderly social service unit less than 5 years, (2) GDS value ranged from 5 to 11, (3) staying on their own (based on his/her decision), (4) Aged 60 to 80 years, (5) able to perform therapy program / no musculoskeletal problem, (6) willing to participate fully during therapy, and (7) not in total care condition. While the exclusion criteria of the patient were (1) having other psychological disorders, and (2) not run the therapy program according to the rules.

**Instrument**
The depression level was assessed using Geriatric Depression Scale (GDS), which consisted of 15 questions (Prasetyo, 2010). GDS is a closed questionnaire that has been used to assess the level of depression specifically for the elderly.

**Intervention**
The brain exercise module was developed based on the brain exercise of (Dennison & Dennison, 2006) adjusted for the elderly. The module was further simplified by reducing the excessive clarity of the image. While the Benson relaxation module was simply describing the Benson relaxation method to the stages of implementation. The implementation of brain gymnastics therapy followed by Benson relaxation consists of two sessions of training sessions and self-execution sessions.

In the training session, brain exercises and Benson relaxation were performed in 5 meetings, and each meeting time was 60 minutes, with an estimated 2 to 3 times of practice. This intensive training was intended to make the elderly remember with existing movements or therapeutic procedures. While the implementation of independent therapy sessions was done by elderly within 2 weeks under observation of researcher. Within 2 weeks elderly was recommended to do the implementation of therapy 6 times, which took 20-30 minutes in each session. In anticipation of forgetfulness in the elderly regarding the movement or procedure of brain gymnastics and Benson relaxation, each elderly was given a module at the beginning of the training.

While the control group was given intervention standard of the orphanage program such as recreation, spiritual guidance and recreation. Routine execution was done in the meeting room. Researchers monitored the activity of respondents in all routine activities.

**Data analysis**
Wilcoxon test was used to determine the effect of brain gymnastics therapy and Benson relaxation on depression level of each group. While to know difference of depression level after intervention between control group and experiment group, Mann-Whitney test was used.

**Ethical consideration**
All respondents in this study have obtained an explanation of the purpose and benefits of the study orally and in writing. This study has been approved by the Health Research Ethics Commission of Medical Faculty of Diponegoro University and Dr Kariadi Hospital in Semarang, with Ethical Clearance No.455 / EC / FK-RSDK / VII / 2017.

**RESULTS**
Table 1 shows that the mean age of the elderly in the experimental group was 70.25 years with a standard deviation of 5.925 years; while the mean age of the elderly in the control group was 69.29 years with the standard deviation of 6.874 years. The youngest age in the control group was the same as the experiment group that was 60 years and the age of the oldest was 80 years.
Table 1 Characteristics of respondents based on age

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Min - Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>28</td>
<td>70.25</td>
<td>5.925</td>
<td>60-80</td>
</tr>
<tr>
<td>Control</td>
<td>28</td>
<td>69.29</td>
<td>6.874</td>
<td>60-80</td>
</tr>
</tbody>
</table>

Table 2 Characteristics of respondents based on gender and health condition status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experiment (n= 28)</th>
<th>Control (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>35.7</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
<td>64.3</td>
</tr>
<tr>
<td><strong>Health Condition Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Sick</td>
<td>21</td>
<td>75</td>
</tr>
</tbody>
</table>

Based on Table 2, it was found that most of the gender of elderly in the experiment group were women, (64.3%) and elderly with male gender was only 35.7%. This is directly proportional to the number of elderly living in Wening Wardoyo's social home as well as more elderly with female gender. In the control group also found that most of the female sex was reaching about 64.3% or 18 elderly. While the number of elderly males was only 35.7% or 9 respondents. It is also directly proportional to the number of elderlies who live in the elderly social services unit of Pucang Gading with more female elderly. Table 2 also shows the percentage of health conditions, which most of the elderly health conditions in the experiment group were sick, reaching 75% or 21 elderly. As for elderly with healthy condition was only 25% or 7 elderly. Similarly, elderly health conditions in the control group that were sick reached 75% or 21 elderly and healthy elderly was only 25% or 7 respondents.

Table 3 Characteristics of respondents based on duration of sickness

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experiment (n= 21)</th>
<th>Control (n = 21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td><strong>Duration of sickness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>12</td>
<td>57.1</td>
</tr>
<tr>
<td>Chronic</td>
<td>9</td>
<td>42.9</td>
</tr>
</tbody>
</table>

Based on table 3, the elderly in the experiment group who experienced chronic pain reached 57.1% or 12 respondents and elderly with acute pain was 42.9% or 10 respondents. This is directly proportional to the control group who experienced chronic pain was 52.4% or 11 respondents and the elderly with acute pain was 47.6 % or 10 respondents.

Table 4 Difference in GDS in the experiment and control group before and after given intervention

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min - Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td>7.21</td>
<td>2.183</td>
<td>5-11</td>
</tr>
<tr>
<td>Posttest</td>
<td></td>
<td>5.04</td>
<td>1.526</td>
<td>2-10</td>
</tr>
<tr>
<td>Control</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td>6.64</td>
<td>1.471</td>
<td>5-10</td>
</tr>
<tr>
<td>Posttest</td>
<td></td>
<td>6.18</td>
<td>1.926</td>
<td>4-10</td>
</tr>
</tbody>
</table>
Table 4 shows that the mean of GDS during pretest in the experiment group was 7.21 with a standard deviation of 2.183. The lowest GDS score in the pretest in the experiment group was 5 and the highest was 11. There was a decrease of GDS score during posttest in the experiment group was 5.04 with a standard deviation of 1.526, with the lowest GDS score of 2 and the highest score of 10.

While the mean score of GDS in the control group during pretest was 6.64 with the standard deviation of 1.471, with the lowest score of 5 and the highest of 10. There was also a decrease of GDS score during posttest in the control group was 6.18 with the standard deviation of 1.926, with the lowest GDS score was 4 and the highest score was 10.

Table 5 Difference of GDS score before and after given intervention in the experimental group

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDS pretest</td>
<td>7.21(5-11)</td>
<td>2.183</td>
<td>0.000</td>
</tr>
<tr>
<td>GDS posttest</td>
<td>5.04(2-10)</td>
<td>1.526</td>
<td></td>
</tr>
</tbody>
</table>

Table 5 shows that p-value was 0.000 (<0.05), which indicated that there was a significant effect of brain gymnastic and Benson relaxation on depression level. There was a significant different in GDS score before and after given intervention. While Table 6 shows p-value 0.053 (>0.05), which indicated that there was no significant difference in GDS score before and after intervention in the control group. It is concluded that there was no effect of activities in social service unit on GDS or depression level.

Table 6 Difference of GDS score before and after given intervention in the control group

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDS pretest</td>
<td>6.64(5-10)</td>
<td>1.526</td>
<td>0.053</td>
</tr>
<tr>
<td>GDS posttest</td>
<td>6.18(4-10)</td>
<td>1.926</td>
<td></td>
</tr>
</tbody>
</table>

**DISCUSSION**

The characteristics of respondents in the experiment and control group were homogenous. The mean age of the elderly in the experiment group was 70.25 years, and in the control group was 69.29 years. This is consistent with studies conducted in the United States suggesting that 10 to 15% of elderly over 65 years and living in communities are depressed (Stanley & Beare, 2007). The incidence of depression also increases in the elderly or 2x higher than in adults (Alexopoulos, 2005).

The number of depressions in the study likely occurred in female respondents. This can be possible because the number of elderly living in the social service unit are mostly female, and female life expectancy is higher than male. According to research data, the number of depressed elderly with female gender is more than 60%. This is in line with the percentage of elderly who live in the social service unit, which was 70% of females and 30% of men. The ratio of depression between female and male elderly is 14:8 (Dharmono, 2008). Study states that women have 2 times tendency of depression compared to men, this is because more women get the stressor / exposure to factors causing depression (Miller, 2009).

According to the expert, depression in elderly is influenced by the decline of health status (Miller, 2009). Physical illness may result in decreased individual functional ability, inhibiting individuals from engaging in activities, which considered sickness is a limitation, therefore the feeling of limitation leads to depression. Chronic diseases cause discomfort especially pain, as well as one of the causes of depression. The physical and chronic diseases that can be one of the causes
of depression are metabolic, endocrine, neurobiology, cancer, heart, lung, blood vessels and anemia (Stanley & Beare, 2007). In this study, the elderly was mostly suffering from acute physical illness or less than 6 months.

The results of this study indicated that there were significant differences about the level of depression before and after the intervention of brain gymnastic therapy and Benson relaxation in the experiment group. This is in line with previous research stated that brain gymnastics therapy can reduce the level of depression. There were significant differences in mean of GDS values in elderly in social institutions before and after cognitive and brain therapy (p value <0.05) (Prasetyo, 2010). Followed by the other study showed a significant difference in depression rate in elderly before and after exercise with p-value <0.01 (Cox, 2007).

Individual therapy is a therapy that focuses on the person or individual and other aspects of the person's life (O’Brien, Kennedy, & Ballard, 2013). The individual therapy is a psychoanalytic therapy and often used as a mental health therapy. Brain gym therapy and Benson relaxation are individual therapies which both therapies focus on the individual itself. Individual therapy according to some experts is the most recent form of therapy to be selected in overcoming mental health problems, which involves group support or social group support (O’Brien, Kennedy, & Ballard, 2013). The results of this study revealed that there was a positive outcome or effect of the therapy of brain gymnastics and Benson relaxation in reducing depression levels in the elderly.

CONCLUSION

It is concluded that there was a significant effect of brain gymnastics therapy and Benson relaxation in decreasing the depression level in elderly seen from the GDS. It is suggested that brain gymnastic therapy and Benson relaxation can be one of independent nursing interventions through empowerment of the elderly social service unit as an effort to improve care for elderly groups.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

References


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EFFECT OF HYPNOBIRTHING ON THE PROGRESS OF THE LATENT PHASE OF LABOR IN PRIMIGRAVIDA

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Abstract
Background: The first stage of labor is a tiring moment for mothers, which may cause exhaustion, dehydration, risk of infection, uterine atony, and postpartum hemorrhage. Hypnobirthing is considered effective to speed up early labor process.

Objective: This study aimed to examine the effect of hypnobirthing on the progress of the latent phase of labor.

Methods: This study was a quasi-experiment with posttest only control group design. Thirty-two primigravida mothers in the latent phase of labor were selected using purposive sampling, with 16 assigned in the experiment group and the control group. The progress of labor was measured by four indicators recorded in partograph, namely frequency and duration of uterine contraction, cervical dilatation, and descent of the fetal head. Independent t-test was used for data analysis.

Results: There was a significant difference in the frequency of uterine contraction (p=0.001), duration of contraction (p=0.001), cervical dilatation (p=0.007), and descent of the fetal head (p=0.001) between the experiment group and the control group.

Conclusion: Hypnobirthing technique is significant in accelerating the progress of the latent phase of labor in primigravida mothers.

Keywords: hypnobirthing; latent phase; labor; primigravida

INTRODUCTION

The duration of labor is influenced by several factors, such as uterine strength, abdominal muscle contraction, diaphragm contraction and ligament action. The other factors are the fetal factor (passanger) and the factor of the birth passage (Karo, Pramono, Wahyuni, Mashoedi, & Latifah, 2017). Labor is divided into 4 stages, namely (i) the opening stage, (ii) the expenditure stage, (iii) the stage that the placenta is released from the uterine wall and is born, and (iv) the stage from the birth of the placenta up to the next 2 hours (Wahyuni, Pramono, Suhermi, & Widyawati, 2017). The progression of labor in the first stage is a tiring moment, which a mother begins to feel pain because the activity of the uterus begins to be more active. The first stage of labor may cause exhaustion, dehydration, risk of infection, uterine atony, and postpartum hemorrhage. If this stage is not well-managed, the safety of mothers and fetus may be affected (Khomsah, Suwando, & Ariyanti, 2017).
In Indonesia, Maternal Mortality Rate (MMR) during childbirth remains high as the third highest rank in South Asia and Southeast Asia. There were 228 maternal deaths per 100,000 live births in 2007, increased to 359 maternal deaths per 100,000 live births in 2012, and decreased slightly to 305 maternal deaths per 100,000 live births in 2015 (World Health & Unicef, 2014). On the other hand, the complications during labor are common in Indonesia, such as postpartum hemorrhage, trapped placenta, prolonged pregnancy and infection. The prolonged labor accounted for 11% of maternal deaths in Indonesia (MOH, 2014).

Based on preliminary study in 4 midwives on November 2016 in Midwifery Center in Lamongan regency, it is found that primigravida mothers often experienced problems in the first stage of labor, with the average of > 13 hours. The first stage of labor refers to the time required to deal with labor begins with regular uterine contractions until the cervix opens completely. Normally, the length of first stage of primigravida is 13 hours, and multipara is 7 hours. Thus, the efforts to maintain uterine contraction in the first stage of labor is needed.

One of the efforts is by using hypnobirthing technique. This technique is a combination of a natural birth process with hypnosis to build positive perceptions and self-esteem and decrease fear, anxiety, tension and panic before, during and after childbirth (Kuswandi, 2014). The hypnobirthing method is either autohypnosis (self-hypnosis) in facing and undergoing pregnancy and childbirth preparation in order to be able to go through their pregnancy and childbirth in a natural, fluent, and comfortable (painless) way (Kuswandi, 2014).

Hypnobirthing combines breathing technique, relaxation, affirmation and visualization, as well as deepening. In breathing techniques, the mother can save energy during the depletion phase during cervical dilatation. In addition, the slow breathing that is taught can dilute and open the cervix that can shorten the duration of labor. While relaxation, visualization, and affirmations help mothers cope with tension, stress, and discomfort during childbirth (Mongan, 2016).

Previous studies have been conducted about the effect of hypnobirthing in labor process (Astuti & Noviyanti, 2016; Madden, Middleton, Cyna, Matthewson, & Jones, 2012), but lack of study related to the its effect on the progress of the latent phase of labor. Thus, the aim of this study was to examine the effect of hypnobirthing on the progress of the latent phase of labor.

**METHODS**

**Study design**

This study employed a quasi-experimental study with posttest only control group design.

**Setting**

The research was conducted in four Independent Midwifery Practice Centers in Lamongan Regency on January 8, 2016 until February 2, 2017.

**Sample**

Thirty-two primigravida mothers in the latent phase of labor were selected using purposive sampling, which 16 assigned in the experiment and control group.

**Intervention**

Hypnobirthing was implemented by the researchers who have been trained and certified. Hypnobirthing was done 30-45 minutes with lemon test and suggestibility test assisted by midwives in the location of the study.

**Instrument**

Demographic instrument was used to collect the demographic data of the respondent, such as age, education, occupation/activity, and parity. To measure the effect of hypnobirthing on the progress of the latent phase of labor, partograph was used with four indicators: frequency and duration of
contraction, cervical dilatation, and descent of the fetal head.

Ethical consideration
The research has met the ethical requirements of the Ethics Research Commission of Politeknik Kesehatan Kemenkes Semarang with approval number: 049 / KEPK / Poltekkes-Smg / EC / 2017. The study permission was also obtained from four Independent Midwifery Practice Centers. Informed consent was signed by each respondent. All of the respondents were given explanation about the research objectives, procedures, risks and benefits, confidentiality and willingness.

Data analysis
Descriptive statistics was used to describe mean and frequency distribution of characteristics of the respondents. Independent t-test was used to see the difference in both experiment and control group.

RESULTS
Table 1 shows that majority of the respondents aged 21-30 years, with 10 respondents in the experiment group and 13 respondents in the control group. There was no difference of the age between the two groups with p=0.433. While the respondent’s education in the control group was mostly senior high school (10 respondents) and the experiment group was senior high school (6 respondents) and university level (6 respondents). However, there was no difference of educational level between both groups with p=0.343. And majority of the respondents in both groups worked as a housewife (p=0.559).

Table 1 Characteristics of the respondents

<table>
<thead>
<tr>
<th>Category</th>
<th>Experiment (n = 16)</th>
<th>Control (n=16)</th>
<th>Homogeneity test</th>
<th>P-value (Chi Square)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s age (year)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 20</td>
<td>6</td>
<td>3</td>
<td>0.165</td>
<td>0.433</td>
</tr>
<tr>
<td>21-30</td>
<td>10</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior high school</td>
<td>4</td>
<td>3</td>
<td>0.100</td>
<td>0.343</td>
</tr>
<tr>
<td>Senior high school</td>
<td>6</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University level</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>9</td>
<td>11</td>
<td>0.142</td>
<td>0.559</td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
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<td>2</td>
<td></td>
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<tr>
<td>Farmer</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 Frequency and duration of contraction, cervical dilatation, and descent of the fetal head

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of contraction (per 10 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>3.929</td>
<td>0.534</td>
</tr>
<tr>
<td>Control group</td>
<td>3.000</td>
<td>0.549</td>
</tr>
<tr>
<td>Contraction duration (second/contraction)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>39.335</td>
<td>2.863</td>
</tr>
<tr>
<td>Control group</td>
<td>35.539</td>
<td>2.708</td>
</tr>
<tr>
<td>The progress of cervix dilatation (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>3.563</td>
<td>1.750</td>
</tr>
<tr>
<td>Control group</td>
<td>2.125</td>
<td>0.957</td>
</tr>
<tr>
<td>Descent of fetal head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>1.125</td>
<td>0.500</td>
</tr>
<tr>
<td>Control group</td>
<td>0.125</td>
<td>0.342</td>
</tr>
</tbody>
</table>
Table 2 shows that the mean of frequency of contraction evaluated in 10 minutes in the experimental group was 3.929 times with standard deviation of 0.534. While the mean of frequency of contraction in the control group was 3.000 times, and a standard deviation of 0.549. It is also known that the mean of duration of contraction in each time of contraction in the experimental group was 39.335 seconds with standard deviation of 2.863. While the mean of duration of contraction in each time of contraction in the control group was 35.539 seconds with standard deviation of 0.534. The mean of the progress of cervical dilatation in the experimental group was 3.563 cm with standard deviation of 1.750. While the mean of the progress of cervical dilatation in the control group was 2.125 cm with standard deviation of 0.957. Table 2 also shows that the mean of descent of fetal head in the experimental group was 1.125 with standard deviation of 0.500; while the mean of descent of fetal head in the control group was 0.125 with standard deviation of 0.342.

<table>
<thead>
<tr>
<th>Confounding variables</th>
<th>Frequency of contraction</th>
<th>Duration of contraction</th>
<th>Cervix dilatation</th>
<th>Descent of fetal head</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>0.441</td>
<td>0.354</td>
<td>0.153</td>
<td>0.411</td>
</tr>
<tr>
<td>Control group</td>
<td>0.114</td>
<td>0.169</td>
<td>0.046</td>
<td>0.468</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>0.395</td>
<td>0.285</td>
<td>0.227</td>
<td>0.336</td>
</tr>
<tr>
<td>Control group</td>
<td>0.785</td>
<td>0.120</td>
<td>0.382</td>
<td>0.504</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment group</td>
<td>0.839</td>
<td>0.726</td>
<td>0.823</td>
<td>0.854</td>
</tr>
<tr>
<td>Control group</td>
<td>0.658</td>
<td>0.546</td>
<td>0.488</td>
<td>0.451</td>
</tr>
</tbody>
</table>

Table 3 shows that there were no significant effects of confounding variables on frequency and duration of contraction, cervical dilatation, and descent of the fetal head, only age variable had a significant effect on cervix dilatation.

Table 4 Difference of frequency and duration of contraction, cervical dilatation, and descent of the fetal head between the experiment and control group using Independent t-test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experiment</th>
<th>Control</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Frequency of contraction</td>
<td>3.929</td>
<td>0.534</td>
<td>3.000</td>
<td>0.549</td>
</tr>
<tr>
<td>Duration of contraction</td>
<td>39.335</td>
<td>2.863</td>
<td>35.539</td>
<td>2.708</td>
</tr>
<tr>
<td>Cervix dilatation</td>
<td>3.563</td>
<td>1.750</td>
<td>2.125</td>
<td>0.957</td>
</tr>
<tr>
<td>Descent of fetal head</td>
<td>1.125</td>
<td>0.500</td>
<td>0.125</td>
<td>0.342</td>
</tr>
</tbody>
</table>

Table 4 shows that there was a significant difference in the frequency of contraction (p=0.001), duration of contraction (p=0.001), cervical dilatation (p=0.007), and descent of the fetal head (p=0.001) between the experiment and control group.

The result of effect size calculation in this study was 1.69 for frequency of contraction, 1.401 for duration of contraction, 1.502 for cervical dilatation, and 2.92 for descent of fetal head, which indicated that there was a very strong influence of hypnobirthing on the progress of labor.

DISCUSSION

Findings of this study indicated that there was significant effect of hypnobirthing on the latent phase of labor, which specifically on the frequency and duration of contraction,
cervical dilatation, and descent of the fetal head. In this study, the average of frequency of contraction in 10 minutes in the experimental group was 3.929 times and its duration in each time of contraction was 39.335 seconds. This shows that the frequency and duration of contraction in the experimental group were good enough, as stated by previous study that contraction in the latent phase of labor is adequate if its contraction is \( > 2 \) times and duration is closely to 40 seconds (Sumapraja, 2002).

The results of this study also showed that the average of cervical dilatation in the experimental group in the first 4 hours of the first stage was 3.563 cm and some of them had the progress of descent of fetal head. It suggests that the cervical dilatation in the experimental group was quite effective, as previous study says that the normal cervical dilatation size in the latent phase of labor is about 3 cm (Varney, Kriebs, & Gegor, 2007).

While the fetal head descent in the latent phase rarely shows a progress. In the experimental group, the progress of fetal head descent was very good, as most have progressed from Hodge 1 to Hodge 2 and Hodge 3. According to literature, in normal labor, the advancement of cervical dilatation is always followed by a decrease in the lower part of the fetus or fetal head descent. Usually the fetal head descent occurs after the cervical dilatation reaches 7 cm or after the first 4 hours of the first stage, but if the descent of head can be achieved before that, then the process of delivery is faster than normal (Farrer, 1990).

The progress of labor achieved by the experimental group cannot be separated from the influence of hypnobirthing technique given for 60 minutes. The hypnobirthing used relaxation techniques, including breathing exercises, relaxation and visualization with positive suggestion. According to literature, hypnobirthing aims for the mother to be able to give birth comfortably, quickly and smoothly and eliminate the pain of childbirth without any anesthetic aid. This method also emphasizes more on giving birth in a positive, gentle, secure way and how to achieve it easily (Aprillia, 2010). In this study, respondents were very cooperative following the guidance of hypnobirthing technique to obtain useful results.

Hypnobirthing is a natural method used to eliminate fear, panic, tension and other stresses of mothers in labor. Therefore, it is said that hypnobirthing refers more to hypnotherapy, namely the exercise of subconscious suggestion to support the conscious mind that controls the mother's action in undergoing labor process (Mongan, 2016). Hypnobirthing is intended to prepare and train the muscles that play an optimal role in the process of delivery through breathing exercises, relaxation, visualization, and affirmations and deepening. These exercises can affect mother's power, passage, passanger, psychology, and helpers (Mongan, 2016).

The breathing technique helps the mother save energy during labor phases. Breathing slowly maximizes waves of vertical muscles to work more efficiently in pulling up the lower circular muscles, as well as diluting and opening the cervix. Hypnobirthing teaches a deeper level of relaxation to eliminate stress as well as fear and anxiety ahead of birth (Mongan, 2016).

On the fetus factors, hypnobirthing teaches the mother to communicate with the fetus. Relaxation methods were used for communication to tell the fetus that the mother and the fetus will pass the labor process together comfortably and smoothly. The calm and peaceful vibration will be felt by the fetus which is the basis of the development of the soul. Fetal growth is healthier because calm conditions will provide balance hormones to the fetus through the placenta. Hypnobirthing also reduces the risk of birth trauma that can affect the mental and psychological child in the future (Madden et al., 2012).
The results of this study were in line with previous study showed there was a significant influence of deep breathing exercises on the progress of labor (Astuti & Noviyanti, 2016; Yulidaningsih, 2006). The practice of relaxation is an important part of the hypnobirthing technique, but the difference is that relaxation technique performed by previous study was a progressive muscle relaxation technique (Yulidaningsih, 2006), while the relaxation technique in hypnobirthing in this study was deep breath relaxation.

However, the method of hypnobirthing can provide mental support that positively impacts the mother's psychological state, which affects the smoothness of the labor process. At the time of delivery, stress hormones, such as adrenaline, interact with beta-receptors in the uterine muscle and inhibit contraction and delay labor, therefore mothers require relaxed and comfortable conditions (Mongan, 2016). When the condition is calm and relaxed, the subconscious mother will adjust the body's harmony and produce anesthesia or natural anesthesia in the mother, the endorphin hormone. Hypnobirthing is proven effective in providing comfort at the time of delivery.

Limitation of the study
The obstacles and limitations encountered during the implementation of this intervention are the presence of the family of the respondents that await the delivery process, which affected the concentration of the respondents. On the other hand, theoretically, the implementation of hypnobirthing should start from the first trimester of pregnancy, but in this study the implementation of hypnobirthing was only given at the latent phase, so the result might be less than the maximum.

CONCLUSION
Based on the results of this study, it can be concluded that hypnobirthing has a significant effect on frequency and duration of contraction, cervical dilatation, and descent of the fetal head. Thus, primipara mothers are suggested to develop hypnobirthing technique independently from the beginning of pregnancy until the labor process to speed up the progress of normal labor. Midwives are also recommended to apply hypnobirthing technique in antenatal care services. The technique is expected to assist midwives in reducing the risk of obstacles and complications in normal labor.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

References


EFFECT OF SPIRITUAL BASED MINDFULNESS INTERVENTION ON EMOTIONAL CONTROL IN ADULT PATIENTS WITH PULMONARY TUBERCULOSIS

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Abstract
Background: Emotions have an impact on the healing process as it affects the body’s defense system. The work that can be done to control the emotions of pulmonary TB patients is mindfulness with a spiritual approach.

Objective: To examine the effect of spiritual based mindfulness intervention on the emotional control in adult patients with pulmonary TB.

Methods: This was a pre-experimental study with one group pre-posttest design with a total of 45 adult patients with pulmonary TB recruited purposively in the public health centers. A questionnaire of emotional regulation was used for data analysis. Paired t-test was used for data analysis.

Results: There was a significant difference in emotional control between before and after given spiritual based mindfulness intervention with p = 0.000 (<0.05).

Conclusion: The spiritual based mindfulness intervention has a significant effect to improve the emotional control of adult patients with pulmonary TB. This can be used as one of the efforts to control the emotions of pulmonary TB patients as well as to speed the healing process.

Keywords: mindfulness; spiritual approach; emotional control; pulmonary tuberculosis

INTRODUCTION

TB cases are still one of the world public health problems despite control efforts with the DOTS strategy have been implemented in many countries since 1995 (MOH, 2015b). The World Health Organization (WHO) reports that 9.6 million people have fallen ill with tuberculosis cases and 63% with smear positive (WHO, 2015). TB cases in Indonesia continue to increase and become the country with the second highest TB cases after India (MOH, 2015a). TB infects many productive ages and increases mortality rates in communities, especially in developing countries (Wijaya, 2012). The case of pulmonary TB deaths in Indonesia in 2013 was 25 cases in 100,000 and increased in 2014 to 41 cases in 100,000 people. The success of pulmonary tuberculosis patients treatment in Indonesia in 2015 amounted to 85% but decreased from the previous 6 years (2008-2014) above 90% (MOH, 2015a). One of the causes of treatment failure is patient’s
withdrawal. Causes of drug withdrawal are also caused by physical problems (large drug size, large doses of drugs, and frequent coughing) and psychological problems (anxiety, stress and depression) (Tola et al., 2015).

The psychological problem that is commonly found in pulmonary TB patients is the lack of ability to control negative emotions. The negative emotional reactions that are often expressed are unable to accept, deny, feel annoyed, worry, cry, fear death and suicide (Xavier & Peixoto, 2015). Patients with pulmonary TB who cannot control their emotions are less able to adapt to their illness and affect self-care behavior (Rajeswari, Muniyandi, Balasubramanian, & Narayanan, 2005). The results showed that patients with pulmonary tuberculosis who experienced emotional disturbance by 44% and at risk of emotional mental disorder of 2.8 times higher (Tola et al., 2015). The results of this study is supported by a preliminary study conducted by the researchers in 24 patients with pulmonary TB at Public Health Center of Kopeta, Beru and Wolomarang located in Sikka Regency of East Nusa Tenggara Province, which indicated that 8 patients said they were worried about the illness, 12 patients said they were anxious and desperate because of the long treatment, and 4 patients were stressed out of work. Self-control for patients with pulmonary tuberculosis undergoing treatment needs to be done in order to reduce the impact of emotional stress so as not to aggravate the patient's condition (Janowski, Kurpas, Kusz, Mroczek, & Jedynak, 2014; Tola et al., 2015). One community health care effort in the community is to increase individual health efforts by empowering patients to take care of themselves (Efendi & Makhfudli, 2009).

Nurses as health workers have a role to provide a comprehensive service one of which is the emotional support to overcome the psychological problems of patients during illness by providing a nursing action (Chalco et al., 2006). The action aims to reduce the level of psychological and psychological tension due to stressors that suppress and replace it with a relaxed state and calm (Safaria & Saputra, 2009). One of the nursing actions that can be given to control the emotions of pulmonary tuberculosis patients is mindfulness with a spiritual approach. Mindfulness with a spiritual approach is done by using “STOP” techniques that pause from what is thought, deep breath, focus attention on the current experience associated with emotion, prayer and sincerity (Kar, Ling, & Chong, 2014).

Previous studies have suggested that mindfulness with an effective spiritual approach improves psychological wellbeing in patients with type 2 diabetes, reduces stress in mental health care and improves body defense in HIV patients (Creswell, Myers, Cole, & Irwin, 2009; Jayanti & Lestari, 2016; Lam, 2014). At the time of mindfulness, nervous system activity is developed by stimulating the amygdala. The mechanism of amygdala work is by lowering the production of cortisol hormones that trigger anxiety and reduce stress reactions to the point of zero so that one can control his/her emotions, foster positive emotional response and effective coping. Theoretically, decreased cortisol will be followed by increased immunologic body resistance so as to speed the recovery of the patient (Mayo, 2010; Sholeh, 2006). The purpose of this study was to examine the effect of spiritual based mindfulness intervention on the emotional control in adult patients with pulmonary TB in the community.

METHODS

Study design
This was a pre-experimental study with one group pre-posttest design.

Sample
A total of 45 adult patients with pulmonary TB were recruited purposively from four public health center, namely public health center of Wolomarang, Kopeta, Beru and Waipare located in Sikka Regency East Nusa Tenggara. Each patient was recruited from one public health center and was selected based on criteria as follows:

1. They have been diagnosed as having pulmonary tuberculosis by a medical doctor
2. They are 18 years old or above
3. They have completed at least one year of treatment with pulmonary tuberculosis
4. They are willing to participate in the study
5. They have no cognitive impairment

A pre-test and post-test questionnaire was used to assess the emotional control of the patients. The questionnaire consisted of 10 questions related to emotional control with a Likert scale of 1 to 5. The scoring was calculated based on the formula:

Score = (Σ Score of each question × Number of questions) / (Number of questions)

The effectiveness of the mindfulness with a spiritual approach was measured by comparing the pre-test and post-test scores of emotional control. The data was analyzed using the paired samples t-test. The significance level was set at p < 0.05.
Tenggara Province. The inclusion criteria of the sample were patients with BTA-positive pulmonary TB or based on radiology examination results, with category 1 and 2, who came for treatment at public health center, aged 15-60 years, and without HIV.

**Instrument**

The emotion regulation questionnaire by Gross was used (Gross & John, 2003). The questionnaire consists of 10 questions, which its dimensions measured in this study include two different aspects of the respondent's emotional life. The first question concerns the emotional experience or what is felt within the self. (e.g. when I am faced with a stressful situation, I try to think about it calmly). The second question relates to the emotional expression (e.g. when I feel negative emotions such as angry, I make sure I do not reveal them). This questionnaire was used to measure the emotional control of adult patients with pulmonary TB. The scale used was interval to assess the mean value of emotional control before and after the mindfulness intervention with the spiritual approach. The questionnaire has been translated into Indonesian language and tested for the validity and reliability, with Cronbach alpha of 0.873.

**Intervention**

The spiritual based mindfulness intervention was done 2 times a week for 5 weeks at the public health centers and continued by the respondent at home every day for 5 weeks with 10 minutes of therapy duration. This intervention was done by the researchers themselves who have been trained by the miracle team of caring (MOC) of nursing faculty of Undip. Observation of mindfulness with the spiritual approach of patients at home was done by the selected drug supervisor (PMO) and has followed the training given by the researcher. The spiritual based mindfulness intervention in this research was conducted using STOP technique (Kar et al., 2014). S - Stop taking a meditative attitude by sitting cross-legged, straighten body and palming above your thighs and facing upwards, closing your eyes, and pausing for a moment from what you think. T - Take deep & mindful breaths relaxation by taking a breath is slowly held for 10 seconds and then exhaled slowly, repeated 3 times, regulating the breath and feeling flowing to the chest, saying in the heart "Breathe in" while inhaling and "Release" when exhaling to help to concentrate. O - Observe the present moment. Focusing on the current state of emotions and feelings, observing or reflecting on myself who is very weak and only by the strength of Lord to become strong, "I will use God's power to achieve my great ideals." P - Proceed with a smile (process). Continue with prayer according to the religion of the lung tuberculosis patient (e.g. Islam with istighfar, and Christian with prayer of surrender), take a deep breath and breathe out while saying happy expression (I am sincere, I am healthy, I am happy).

**Data analysis**

Data of the spiritual based mindfulness intervention was normally distributed, with Shapiro Wilk result of <0.05. So, paired-t-test was used for data analysis.

**Ethical consideration**

All respondents in this study have obtained an explanation of the purpose and benefits of the study. Explanations were given orally and in writing. This research has been ethically approved by the Medical Research Ethics Commission of Medical Faculty of Diponegoro University and dr. Kariadi Semarang with number 339 / EC / FK-RSDK / V1 / 2017.

**RESULTS**

Table 1 shows that the majority of the characteristics of respondents were in the group age of 46-60 years (40%), male (64.4%) and had low level of education (57.8%).
Table 1 Characteristics of respondents based on age, gender, and education (n=45)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-25 years</td>
<td>10</td>
<td>22.2</td>
<td>22.2</td>
<td>22.2</td>
</tr>
<tr>
<td>26-45 years</td>
<td>17</td>
<td>37.8</td>
<td>37.8</td>
<td>60.0</td>
</tr>
<tr>
<td>46-60 years</td>
<td>18</td>
<td>40.0</td>
<td>40.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>35.6</td>
<td>35.6</td>
<td>35.6</td>
</tr>
<tr>
<td>Male</td>
<td>29</td>
<td>64.4</td>
<td>64.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>26</td>
<td>57.8</td>
<td>57.8</td>
<td>57.8</td>
</tr>
<tr>
<td>Middle</td>
<td>15</td>
<td>33.3</td>
<td>33.3</td>
<td>91.1</td>
</tr>
<tr>
<td>High</td>
<td>4</td>
<td>8.9</td>
<td>8.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2 Effect of mindfulness with spiritual approach on emotional control using paired t-test

<table>
<thead>
<tr>
<th>Emotional control</th>
<th>n</th>
<th>Mean±SD</th>
<th>Mean difference ±SD</th>
<th>CI 95%</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>45</td>
<td>24.49±2.69</td>
<td>9.17±1.40</td>
<td>8.75 - 9.59</td>
<td>0.000</td>
</tr>
<tr>
<td>Posttest</td>
<td>45</td>
<td>33.67±2.22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that the mean of emotional control before intervention was 24.49 and increased to 33.67 after intervention. Paired t-test obtained p-value 0.000 (<0.05), which indicated that there was a significant effect of mindfulness with spiritual approach on emotional control.

DISCUSSION

Most respondents were at the age of 46-60 years (40%), which is in line with the Indonesian health profile data in 2016 states that the most populations who suffer from pulmonary TB are at the age of 45-54 years (19.82%) (MOH, 2015a). The group age of 46-60 years is vulnerable because at this age there is a decrease in the immune system that the body is so easily exposed to mycobacterium tuberculosis. Previous study shows that there is a correlation between age and pulmonary TB i.e. the decrease of T-lymphocytes (85%) and 22% of respondents aged 50-59 years (Sahal, Afghani, & Nilapsari, 2014).

Most of the respondents were male (64.4%). This is consistent with a previous study indicated that most men have a smoking habit compared to women (Flandorfer, Wegner, & Buber, 2010). Active smokers are at higher risk of infected by mycobacterium tuberculosis compared with people who do not smoke. Another study revealed that there was a strong relationship between smoking with the incidence of pulmonary TB with p-value of 0.001 (Lalombo, Palandeng, & Kallo, 2015). It could be said that TB is often associated with lifestyle such as smoking and drinking alcoholic beverages that affect the immune system. The result of this research was supported by previous study indicated that the percentage of males is higher than the percentage of females with pulmonary TB.

Additionally, the majority of respondents had a low level of education (57.8%) (Kurniasari & Cahyo, 2012). The results of this study were in accordance with previous research states most of the pulmonary TB patients had an elementary level of educational background, or even they did not complete elementary schools (Girsang & Tobing, 2010). However, educational background of respondents has a close relationship with knowledge and public awareness in the behavior of lung tuberculosis prevention.
Another study shows that people with low education have a risk of pulmonary TB disease 2 times higher than those with high education (Nurjana, 2015).

Finding of this study revealed that there was a significant increase of the mean of emotional control after given intervention, from 29.75 to 36.99. The mindfulness intervention with spiritual approach has a significant effect on emotional control in adult patients with pulmonary TB. The results were consistent with the suggestion that mindfulness with a spiritual approach can reduce anxiety and can be used as psychotherapy by changing the focus of attention and improving one's emotional control (Mayo, 2010). During mindfulness, the nervous system activities are developed by stimulating the amygdala. The amygdala lowers the production of cortisol hormones that trigger anxiety and reduce stress reactions to the point of zero so that one can control his emotions, foster positive emotional responses and effective coping. Decreased cortisol will be followed by increased immunologic body resistance in order to speed up the healing of the patient (Mayo, 2010; Sholeh, 2006).

The results of this study also supported by previous research showed that mindfulness training with spiritual approach has an effect on psychological wellbeing with p-value 0.01 (Jayanti & Lestari, 2016). Similar with another study showed that there was an influence of mindfulness with spiritual approach for 9 days to violent behavior, which one of the respondents could calm himself independently and the other could control anger (Sari & Dwidiyanti, 2014).

At the time of intervention, the researcher involved the selected drug supervisor (PMO) and the patient to perform mindfulness with a spiritual approach independently. One of the community health care efforts in the community is to increase individual health efforts (UKP) by empowering patients to take care of themselves so as to speed the healing process (Efendi & Makhfudi, 2009). This is consistent previous study revealed that there was an influence of mindfulness on the increase in self-confidence and self-independence in TB patients with p-value <0.05 (Noorratri, Margawati, & Dwidiyanti, 2017).

As this study did not involve control group, thus there might be other variables could possibly influence the emotional control of the patients. Therefore, experimental study with control group is needed to examine the effect of mindfulness with spiritual approach.

**CONCLUSION**

The mindfulness interventions with a spiritual approach has been shown to improve emotional control in adult patients with pulmonary TB. This intervention can serve as one of the interventions to prevent patients from experiencing more severe emotional disorders and speed up the healing process.

**Declaration of Conflicting Interests**

None declared.

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**Author Contribution**

All authors contributed equally in this study.

**References**


on emotional control in adult patients with pulmonary tuberculosis

EXPOSURE TO MASS MEDIA AS A DOMINANT FACTOR INFLUENCING PUBLIC STIGMA TOWARD MENTAL ILLNESS BASED ON SUNRISE MODEL APPROACH

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Abstract
Background: The person suffering mental disorders is not only burdened by his condition but also by the stigma. The impact of stigma extremely influences society which is considered to be an obstacle in the mental disorder therapy. Stigma as the society adverse view towards severe mental disorders is related with the cultural aspect. The interaction appeared from each component of nursing model, called sunrise model, is a model developed by Madeleine Leininger that connects with the wide society views about severe mental disorders condition.

Objective: The aim of this study was to analyze the factors related to public stigma and to find out the dominant factors related to public stigma about severe mental illness through sunrise model approach in Indonesia.

Methods: This study used observational analytical design with cross sectional approach. There were 150 respondents contributed in this study selected using purposive sampling technique. Spearman Rank and multiple logistic regression were used for data analysis.

Results: The results showed a significant relationship between mass media exposure, spiritual well-being, interpersonal contact, attitude, and knowledge with public stigma about mental illness. The result of multiple logistic regression revealed that the low exposure of mass media had the highest OR value at 26.744.

Conclusion: There were significant correlations between mass media exposure, spiritual well-being, interpersonal contact, attitude, and knowledge with public stigma toward mental illness. Mass media exposure was a dominant factor influencing public stigma toward mental illness.

Keywords: mass media exposure; public stigma; stigma toward mental illness; sunrise model

INTRODUCTION

Based on Indonesia’s Basic Health Research data in 2007, the number of people with severe mental illness reached 4.6 per mile and decreased to 1.7 per mile in 2013. East Java is one of the provinces in Indonesia having a high number of people with severe mental illness, which were 3.1 per mile in 2007 and decreased to 2.2 per mile in 2013 (Riskesdas, 2007). Despite the decline, the prevalence is still high compared to the national prevalence. Severe mental illness such as schizophrenia is the most commonly found type in East Java. This mental illness may cause problems in individuals, families, and society. Within the social environment, the main existing problem is the problem of stigma (Efendi & Makhfudli, 2009). In general, people still believe that severe mental illness is a curse...
and weakness of faith owned by someone. The society tends to bring family members with severe mental illness to seek a dukun rather than to the Psychiatric Hospital (Simanjuntak, 2008; Wicaksana, 2008).

People suffering from severe mental illness are not only burdened by their condition but also by the stigma associated with mental illness itself (Saldivia et al., 2014). An online survey conducted from 2014 to 2015, involving 596,712 respondents from 229 countries in the world, proves that the stigma associated with mental illness is higher in developing countries rather than in developed countries. The result shows around 16% respondents felt that people who suffer from mental illness were more violent than others (Seeman, Tang, Brown, & Ing, 2016). Stigma could hinder a therapy, become a barrier to health services access and affect the self-esteem of people who suffer from mental illness. In addition, stigma also obstructs the social interactions between people with severe mental illness and their environment, affecting their quality of life (Gearing et al., 2012; Saldivia et al., 2014).

Stigma as a negative view of society toward severe mental illness is associated with cultural aspects (Monerieff, Byrne, & Crawford, 2012; Sismulyanto, Supriyanto, & Nursalam, 2015). The nursing theory supporting the cultural aspect is Madeleine Leininger’s Culture Care: Diversity and Universality Theory through a model known as the sunrise model. This theory involves cultural factors consisting of seven components, i.e. technology, religion and philosophy, kinship and social, cultural values and beliefs, political and legal concerns, economics, and education. The interaction of each component of culture and social structure is related to the social views regarding severe mental illness in the society (McEwen & Wills, 2011).

The factors associated with stigma when linked to socio-cultural components in sunrise models include exposure to mass media, spiritual well-being, interpersonal contact, attitudes, and knowledge. Several previous studies have shown inconsistent results on factors related to public stigma toward severe mental illness. These conflicting results are very interesting to be re-examined using the nursing theory approach. Stigma in society is still a quite difficult problem to be handled and become one of the obstacles to cure people with mental illness and society reluctance to come to the mental health services.

Based on the results of the preliminary study in Sukonolo Village, one of the villages in Malang regency, the number of people with mental illness is high. The severe mental illness prevalence in this village is 6.29%. In this village, there is a mixture of two cultures i.e. Java and Madura. From the preliminary study, the researchers found that society still has stigma toward severe mental illness. From the results of interviews with 10 people, as many as 70% said they were afraid to interact with people with severe mental illness and considered people with severe mental illness should be avoided and impossible to cure. There are two patients with severe mental illness in Sukonolo Village who are put in "pasung" or physical restraint. Based on the problem, the researcher was interested to conduct a research regarding factors related to public stigma and to find out the dominant factor related to public stigma toward people with severe mental illness through Sunrise Model approach in Sukonolo Village, Malang Regency.

METHODS

Study design
This research was a quantitative research. The design used was observational analytic with the cross-sectional approach. This research was conducted in Sukonolo Village, Malang Regency Indonesia from December 18th, 2017 to January 11th, 2018. Independent variables included mass media exposure, spiritual well-being, interpersonal contact, attitude, and knowledge. Dependent variable was public stigma toward mental illness. Study
hypothesis was mass media exposure, spiritual well-being, interpersonal contact, attitude, and knowledge had significant relationship with public stigma toward mental illness.

Sample
The number of samples was 150 respondents selected by purposive sampling technique. Inclusion criteria were person living close to people with mental illness (maximum of 5 houses), aged ≥ 18 years, person who can read and write, and willing to be a respondent.

Measurement
This study used a questionnaire of respondents’ data covering age, gender, education, occupation, marital status, income, and health information exposure. This study used the questionnaire as the instrument, namely CAMI (Community Attitudes toward the Mentally Ill), SKAPS (Schizophrenia knowledge, attitudes and perceptions scale), and SWBC (Spiritual Well-Being Scale), which has been translated into Indonesian language. Knowledge and attitude was measured using SKAPS, which was developed by (Reddy and Smith, 2006) and has been modified by the author. Spiritual well-being was measured using the SWBC which was developed by Paloutzian and Ellison in 1982, while public stigma was measured using CAMI developed by Martin Taylor and Michael Dear in the 1970s (Girma et al., 2013; Paloutzian, Bufford, & Wildman, 2012). The author has also modified it in order to adjust to the current conditions of the community in the research location. Meanwhile, mass media exposure was measured using a questionnaire sheet containing the frequency of people getting negative information about mental disorders from television / radio / internet / newspapers / magazines in the last four weeks obtained by watching or listening. At the same time, interpersonal contacts were measured using a questionnaire containing the frequency of people interacting with people suffering severe mental disorders within the last four weeks.

The validity of instrument for the data collection in this research used Pearson Product Moment for knowledge, attitude, spiritual well-being, and public stigma. The research instrument in this study was tested on 30 respondents so that the \( r_{valid} \) value used was 0.361. The validity test was conducted in Bantur Village for people who met the inclusion and exclusion criteria. The validity test was performed once and the result of the questionnaire of knowledge was originally consisted of 12 questions with nine valid questions and the value of \( r_v \) was greater than 0.361. Three invalid questions were discarded because those nine valid questions mentioned before have already represented each knowledge indicator. The author performed identical treatment for the attitude, spiritual well-being, and public stigma questionnaire. The attitude questionnaire consisted of 12 valid questions and one invalid question. The spiritual well-being questionnaire was initially consisted of 20 question items. But it turned out that only 18 items of questions were declared valid because it has \( r_v > 0.361 \). On the other side, there were 33 items of public stigma questionnaire's questions were stated valid out of 40 question items. Similar to the knowledge questionnaire; the attitude, spiritual well-being, and public stigma questionnaire was only conducted once as well. The invalid questions from each questionnaire were discarded because each indicator in the questionnaire was already represented by the valid questions.

The reliability test of attitude, spiritual well-being, and public stigma questionnaire in this research was conducted using statistical test by comparing the value of \( r_v \) with constant value (0.6). Cronbach’s alpha was set as the \( r_v \) value for the reliability test. The alpha coefficient formula used for the knowledge questionnaire was the Kuder-Richardson-20 or KR-20 formula because it was dichotomous kind of question. If the value of Cronbach’s alpha and coefficient of KR-20 > 0.6, then the instrument is declared as reliable. It is similar to the validity test where the reliability test was also conducted in Bantur Village for people who met the inclusion and
exclusion criteria. Based on the results of reliability test conducted on the 30 respondents, the coefficient KR-20 value found for the knowledge questionnaire was 0.735. Thus, the questionnaire of knowledge was declared as reliable because it has a coefficient value KR-20 > 0.6. Cronbach's alpha's value in the attitude, spiritual well-being, and public stigma questionnaire are 0.772, 0.734, and 0.867 respectively. All questionnaires are stated reliable and can be used as an instrument in this study because it has met the determined requirements.

**Ethical consideration**

This study was approved by the Ethics Committee on Faculty of Medicine, Universitas Brawijaya with letter number: 415/EC/KEPK-S2/12/2017. Written informed consent was obtained from all respondents. Respondents filled in questionnaires accompanied by a researcher or research assistant. The data collection process took approximately 30 - 45 minutes for each respondent.

**Data analysis**

The bivariate analysis used Spearman Rank test with \( \alpha \leq 0.05 \) to determine the relationship between mass media exposure, spiritual well-being, interpersonal contact, attitude, and knowledge with public stigma toward mental illness. Multivariate analysis used multiple logistic regression tests to determine the dominant factor influencing public stigma toward mental illness.

**RESULTS**

The result of the respondents' characteristics taken from Sukonolo Village, Malang Regency is shown in Table 1.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 30</td>
<td>40</td>
<td>26.7</td>
</tr>
<tr>
<td>31 – 40</td>
<td>69</td>
<td>46</td>
</tr>
<tr>
<td>41 - 50</td>
<td>36</td>
<td>24</td>
</tr>
<tr>
<td>51 - 60</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td>Female</td>
<td>78</td>
<td>52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>10</td>
<td>6.7</td>
</tr>
<tr>
<td>Junior High School</td>
<td>41</td>
<td>27.3</td>
</tr>
<tr>
<td>Senior High School</td>
<td>79</td>
<td>52.7</td>
</tr>
<tr>
<td>University</td>
<td>20</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>22</td>
<td>14.7</td>
</tr>
<tr>
<td>Labor</td>
<td>56</td>
<td>37.3</td>
</tr>
<tr>
<td>Civil servant</td>
<td>17</td>
<td>11.3</td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>55</td>
<td>36.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>145</td>
<td>96.7</td>
</tr>
<tr>
<td>Single</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1,500,000.00 IDR</td>
<td>66</td>
<td>44</td>
</tr>
<tr>
<td>1,500,000.00 IDR – 2,500,000.00 IDR</td>
<td>63</td>
<td>42</td>
</tr>
<tr>
<td>2,500,000.00 IDR – 3,500,000.00 IDR</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150</td>
<td>100</td>
</tr>
</tbody>
</table>
Characteristics | Frequency (n) | Percentage (%)
---|---|---
Health Information Exposure
Never | 124 | 82.7
Once | 26 | 17.3
Total | 150 | 100

The survey result presented in Table 1 showed that the majority of the respondents were female (52%) aged 31-40 years old (46%) with their most recent education being at senior high school (52.7%). Most of them were labor with an income less than 1,500,000.00 IDR and never get health information about mental illness. The result of bivariate analysis between mass media exposure, spiritual well-being, interpersonal contact, attitude, and knowledge with public stigma toward mental illness are shown in Table 2.

Table 2 Results of Bivariate Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Public stigma</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure to mass media</td>
<td>0.653</td>
<td>0.000</td>
</tr>
<tr>
<td>Spiritual well-being</td>
<td>0.548</td>
<td>0.000</td>
</tr>
<tr>
<td>Interpersonal contacts</td>
<td>0.353</td>
<td>0.011</td>
</tr>
<tr>
<td>Attitudes</td>
<td>0.688</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.543</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The result of bivariate analysis presented in Table 2 showed that the exposure of mass media, spiritual well-being, interpersonal contact, attitudes, and knowledge have a value of \( p \leq 0.05 \) so that \( H_0 \) is rejected. It can be concluded that there is a relationship between exposure to mass media, spiritual well-being, interpersonal contact, attitudes, and knowledge with the public stigma toward severe mental illness in Sukonolo Village, Malang Regency. The result of multivariate analysis is shown in Table 3.

Table 3 Results of Multivariate Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>p-Value</th>
<th>OR</th>
<th>Hosmer Lemeshow</th>
<th>and</th>
<th>Pseudo R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Knowledge</td>
<td>0.033</td>
<td>5.290</td>
<td>3.629</td>
<td></td>
<td>0.588</td>
</tr>
<tr>
<td>Adequate Knowledge</td>
<td>0.012</td>
<td>8.518</td>
<td>df = 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Spiritual Well-being</td>
<td>0.025</td>
<td>6.829</td>
<td>Sig. = 0.889</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate Spiritual Well-being</td>
<td>0.014</td>
<td>8.150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Exposure to Mass Media</td>
<td>0.006</td>
<td>14.673</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Exposure to Mass Media</td>
<td>0.001</td>
<td>26.744</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Interpersonal Contact</td>
<td>0.495</td>
<td>1.434</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate Interpersonal Contact</td>
<td>0.001</td>
<td>17.130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Attitudes</td>
<td>0.083</td>
<td>4.743</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable Attitudes</td>
<td>0.001</td>
<td>22.142</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result of bivariate analysis presented in Table 2 showed that the exposure of mass media, spiritual well-being, interpersonal contact, attitudes, and knowledge have a value of \( p \leq 0.05 \) so that \( H_0 \) is rejected. It can be concluded that there is a relationship between exposure to mass media, spiritual well-being, interpersonal contact, attitudes, and knowledge with the public stigma toward severe mental illness in Sukonolo Village, Malang Regency. The result of multivariate analysis is shown in Table 3.
analysis, it can be concluded that exposure to mass media variable is the most dominant independent variables associated with the public stigma toward severe mental illness in Sukonolo Village, Malang Regency based on sunrise model approach.

**DISCUSSION**

The results of this study indicated that most respondents with high exposure to mass media category tend to have a high stigma as well. Only two respondents with high exposure to mass media have a low stigma. There are several respondents with moderate exposure to mass media who are found to have a low stigma toward severe mental illness. It can certainly be influenced by many factors, including the level of education and age of respondents (Sulistyani, Pamungkas, & Sutarjo, 2015). Based on the univariate analysis result in this research, 52.7% respondents participated from Sukonolo Village are high school graduate while 13.3% of them are college graduate. Compared to people who received higher educational level, those who received lower educational level might tend to stigmatize severe mental disorders. People who received higher educational level tend to have wider knowledge and to be more open-minded toward new information they received from the media (Nawkova et al., 2012). High school as the majority of the educational level of the respondents is responsible to the result obtained from this research that the public stigma towards severe mental disorders in Sukonolo Village is considered high at 59.3% of the overall community. Another factor such as respondents' age also had an impact to the result. The older someone is, the more mature his or her mental age development would usually be. Thus, there would a bigger probability for them to receive the information better. Most of the respondents' age in this research was ranged from 31 to 40 years old.

The mass media is part of the technology, which is included as one of the socio-cultural factors in Madeleine Leininger’s sunrise model with a quite strong impact in shaping public judgment or opinion. Public perception is shaped by information submitted in mass media both print and electronic media containing negative information about severe mental illness. Information delivered through various print and electronic media can be easily accepted by the public. Negative information forms the stigma of people with severe mental illness so that people have a fear to interact with people with severe mental illness and have difficulty in receiving health information about mental health (Waddell & Taras, 2012).

Most people in Sukonolo Village receive information from television because it is the most common media owned by people of Sukonolo Village. The respondents of Sukonolo Village are often received information that mental disorders are predominantly presented as a dangerous disorder. The information is often received from the news related to violence committed by people with mental disorders to their family and to the closest people around the patients. People in Sukonolo Village have watched the news related to violence committed by people with mental disorders around two until three times in the average of the past four weeks. The news covered some violence such as harming the family member with sharp object, damaging the house by throwing stones, and the news about people with mental disorders going on rampage on the public street. Those kinds of information have made people in Sukonolo Village concern when dealing with people who suffer from mental illness.

When associated with the sunrise model in Madeleine Leininger’s Culture Care: Diversity and Universality Theory, the aspect of mass media as part of technology factors certainly plays a role in shaping a view of health conditions. Information technology allows individuals to acquire, transmit, and exchange information with other individuals. Technological factors are one of the factors that influence the individual cultural-based
opinion. Mass media becomes one means to disseminate information from a different culture to other cultures to form a new view (Leininger & McFarland, 2002). From the analysis of exposure to mass media indicators, the result shows that information related to detrimental mental illness become the most information obtained by the public through the mass media. Other studies have also mentioned that mass media tend to show the negative side of mental illness (Owen, 2012). Based on the explanation, it can be concluded that exposure to mass media is a factor associated with public stigma toward severe mental illness in Sukonolo Village, Malang Regency.

This study shows that spiritual well-being has a significant relationship with public stigma toward severe mental illness in Sukonolo Village, Malang Regency with p-value=0.000. These results are in line with several studies conducted to determine the relationship between spiritual well-being and stigma toward severe mental illness. Research conducted by Azarsa et al. states that the higher the level of spiritual well-being is, the more positive the view for people with severe mental illness will be (Azarsa, Davoodi, Markani, Gahramanian, & Vargaeei, 2015). Consequently, people with high spiritual well-being tended to have a lower stigma. Spiritual well-being as one socio-cultural factor is one of the most important factors in human health and healthy lifestyle. A person with high spiritual well-being is capable of using inner resources and strengths such as anger, denying, guilt, shame, or confusion. An individual is able to improve coping mechanisms, overcome depression and emotional distress, and most importantly is able to improve healthy behaviors and feelings of peace to avoid negative attitudes (Young & Koopsen, 2007).

Interpersonal contacts are found to have a significant relationship with public stigma toward severe mental illness as can be seen from p= 0.011. The results in this study are consistent with studies conducted in the United States involving 605 respondents that a contact record with people with mental illness through the activities carried out together or have a neighbor with mental illness is a factor that affects the stigma toward severe mental illness (Brown, 2012). Contact as one of the socio-cultural factors has an influence in reducing prejudice that occurs between groups primarily through direct contact. Interacting with people with mental illness through positive activities can make one knows the condition of mental illness directly and sees mental illness from a different perspective by listening to stories or experiences directly from the patient (P. W. Corrigan & Bink, 2016; Nelson, 2016; Okpaku, 2014).

The result of analysis carried for each interpersonal contact indicator showed that doing activities all together as the highest contact indicator. People in Sukonolo Village come from two different cultures: Madurese and Javanese. Based on the contact with people who suffer from mental disorders, the differences on those two different cultures are not really apparent. Most of the respondents in this research made contacts with people who suffer from mental disorders by doing some activities together such arisan (rotating savings and credit association which are usually performed by women association in a community), doing a community service around Sukonolo Village, having a communal Quran reading and taking a part in preparing Posyandu (the neighborhood health center) of Psychiatry (Posyandu Jiwa) every Monday on the third week of the month. There are two people who suffer from mental disorders in Sukonolo Village working as farm workers in which they are hired by their own neighbor. Unfortunately, there are also two people with severe mental disorders who are put in "pasung" or physical restraint. That action needed to be taken by the family because they are afraid that the patients would go on rampage and frightened people around the village. People in the village are rarely seen to make contact with people who suffer from mental disorders who are put in pasung because most of them are frightened.
In Sukonolo Village, there is a relationship between attitudes and public stigma to severe mental illness with $p$-value $= 0.000$. From the result of the univariate analysis, 43.4% of respondents have attitude level in a moderate category related to mental illness. The results of this study are in line with research conducted in the United States that attitudes are one of the factors that determine the stigma of mental illness (P.W Corrigan, Powell, & Michaels, 2014). Fripp & Carlson study, which involved 129 Africans and Americans, states that people's attitudes toward severe mental illness are related to the public stigma toward severe mental illness (Fripp & Carlson, 2017). This statement is reinforced by research conducted in India, which stated that attitudes toward severe mental illness had a close connection with stigma. The more positive or better the attitudes of someone about the condition of mental illness is, the more positive the person's views related to mental illness will be (Kathryn et al., 2016). Consequently, the stigma will be lower as well. Conversely, if someone has negative or bad attitudes about mental illness, it will cause higher public stigma which in the end can cause a negative impact for people with mental illness (Upadhyay, Srivastava, Singh, & Poddar, 2016).

Society knowledge about severe mental illness has a significant relationship with public stigma toward severe mental illness in Sukonolo Village, Malang Regency. The results of this study are in line with research conducted on 111 societies in Greece that there is a relationship between knowledge about severe mental illness with public stigma especially on authoritarianism aspect which is one of stigma indicator (Tzouvara & Papadopoulos, 2014). Another study in China involving 1,016 respondents suggests that knowledge about mental illness is an important factor affecting stigma. The lack of society knowledge about severe mental illness is related to the high stigma of mental illness in the society (Chan et al., 2015).

The result of the multivariate analysis shows that exposure to mass media is the most correlation factor with public stigma toward severe mental illness in Sukonolo Village, Malang Regency with OR value of 26.744 compared to four other variables: spiritual well-being, interpersonal contact, attitudes, and knowledge. The results of this study are in line with Sampogna et al. study which states that mass media is one of the most influential factors on society's view of the severe mental illness (Sampogna et al., 2017).

Ma argues that mass media is a major factor in the formation of stigma toward severe mental illness in the community (Ma, 2017). Mental health has become one of the most common public health issues in the community and the mass media is the most abundant source of information about mental health. These research results are in line with the theory by Moncrieff et al. that the mass media greatly affect the perspective of society toward mental illness (Moncrieff et al., 2012). The role of mass media is enormous in the stereotype’s construction. Mass media tend to display the figure of mental illness as a very dangerous threat. More often frequency of a person exposed to negative information will make the view of people tend to be negative so that the stigma will be higher. Thus, it can be concluded that exposure to mass media is the most associated factor related to public stigma toward severe mental illness.

As the most dominant factor toward public stigma regarding mental disorders in Sukonolo Village, mass media should have been able to deliver more positive information about mental disorders. Mass media is considered as the main source for the community to get information about mental disorders. Most people in Sukonolo Village stated that they have never received any of health education regarding mental disorders. Posyandu Jiwa is open every Monday on the third week of the month but unfortunately the center has not established the program for mental health education even though it is assisted by midwives and nurses from Puskesmas Bululawang (Bululawang's
Community Health Center). The current health center is still focused on treating the sick patients and it has not covered those people who are vulnerable to particular risk or even the healthy people yet. The lack of information regarding mental disorders obtained by people in Sukonolo Village leads most of them to be exposed to the information from media such as television.

CONCLUSION

There was a significant relationship between exposure to mass media, spiritual well-being, interpersonal contacts, attitudes, and knowledge with public stigma toward severe mental illness in Sukonolo Village, Malang Regency, Indonesia. Exposure to mass media is the most dominant factor related to public stigma compared to other factors. Further research is expected to analyze the differences between public stigmas about mental illness from different areas (urban and rural) based on sunrise model approach.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

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contemporary movies. *Psychiatric Services, 63*(7), 655-659.


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THE IMPACT OF COMBINATION OF BREASTFEEDING AND EFFLEURAGE MASSAGE IN REDUCING PAIN RESPONSE IN INFANTS INDUCED BY BLOOD SAMPLING IN C-REACTIVE PROTEIN TEST: AN OBSERVATIONAL CROSS-SECTIONAL STUDY

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Abstract
Background: C-reactive protein test is one of clinical assessments to minimize risks of infection in infants. However, its procedure may cause pain. Pain in the infants may result in negative metabolic behavior, physiology and metabolic response.

Objective: This study was to describe the infant's pain response by administering a combination of breastfeeding and an effleurage massage on the blood sampling procedure of C-reactive protein examination.

Methods: This was a descriptive observational cross-sectional study. There were 30 infants selected using consecutive sampling technique, which 15 samples assigned in an intervention group (combination of breastfeeding and effleurage massage) and a control group.

Premature Infant Pain Profile (PIPP) instrument was used to measure pain. Univariate analysis was performed with the aim to describe data in mean and median.

Results: The average of pain response at one-minute observation in the combination of breastfeeding and effleurage massage group was 7.47 ± 1.356, and the average of pain response in the control group was 10.80 ± 1.897. The average pain at five-minutes observation in the intervention group was 3.53 ± 1.922 and the control group was 6.00 ± 1.852.

Conclusions: Pain responses in the combination of breastfeeding and effleurage massage group were lower than the pain response in the control group.

Keywords: breastfeeding; effleurage massage; baby; pain; blood sampling

INTRODUCTION

Every labor is expected to have a healthy baby, but not all labor is normal. There is sometimes a complication, which is needed to be referred from public health centers to a hospital. Even healthy babies born from the delivery process still need to be more intensively observed to minimize risks to their health (Simbolon, 2008). One of the risks that can occur in infant’s health is the occurrence of infection. Even small infections can be a risk of sepsis in infants due to low immunological system (Afriyanti, 2010). Thus, clinical assessment is needed, which is one of the assessments is by investigating C-reactive protein (CRP) (Afriyanti, 2010).

C-reactive protein procedure is done by taking intravenous blood samples that cause the baby to feel pain early in life. Pain in the infant may result in negative metabolic behavior,
physiology and metabolic response (Anand, 2001). Extreme physiological changes can be a contributing factor to the incidence of hypoxia, hypercarbia, acidosis, asynchronous ventilator, pneumothorax, reperfusion trauma, venous congestion, and intraventricular hemorrhagic. Pain exposure is a stimulus that can damage the baby's brain development and contribute to learning disorders and behavior in childhood (Badr et al., 2010). Therefore, the principle of traumatic care in the management of blood sampling is very important.

One of the principles in traumatic care is to minimize pain, which can be done independently by nurses through non-pharmacological pain management without waiting for instructions from the doctor. In addition, this non-pharmacological management is safe, non-invasive and affordable. Some of the non-pharmacological pain management that can be done, such as giving glucose / sucrrose, breastfeeding, non-nutritive sucking (NNS), massage, skin-to-skin contact, and swaddling. Breastfeeding or provision of breast milk as a pain reliever is considered more natural, easy to obtain and use, no additional costs, and no risk (Schollin, 2004).  While effleurage massage is a soft and rhythmic massage technique used to decrease the pain response to make babies feel comfortable (Jain, Kumar, & McMillan, 2006). Effleurage is a safe massage technique, easy to do, no requiring many tools, no cost, no side effects and can be done alone or with the help of others (Tanjung, 2016).

The main action of effleurage massage is the application of the Gate Control theory that can "close the gate" to inhibit the pain stimulation at higher centers in the central nervous system. Previous study proved that baby who is given a massage had a lower PIPP score after blood sampling of the heel than before being massaged with an average pain score of 8.07 (moderate pain) (Abdallah, Badr, & Hawwari, 2013). Another study proved that there were significant outcomes in breastfed infants group with lower pain responses than in the infants given immunization with an average pain score of 4.37 (moderate pain) (Astuti, 2011). However, there is a lack of information on the combination of the two interventions. Therefore, this study aimed at describing pain response of infants during blood sampling in the group given a combination of breastfeeding and effleurage massage and a control group.

METHODS

Study design
This was a descriptive observational cross-sectional study. The research was conducted in the Perinatology Ward of Siti Khodijah Hospital Sepanjang Sidoarjo East Java in February 2017.

Population and Sample
There were 30 infants selected using consecutive sampling technique, which 15 samples assigned in an intervention group (combination of breastfeeding and effleurage massage) and a control group. The inclusion criteria of the sample were infants born with gestational age over 36 weeks, weight >2500 gr, no history of the disease at birth and no congenital defects, stable condition with normal vital signs, getting oral nutrition (breast milk), with an indication of C-reactive protein examination according to the results of a doctor's examination, parents of babies were allowed their children to be respondents.

Instrument
Premature Infant Pain Profile (PIPP) instrument was used to measure pain and has been validated for premature and mature infants during an action that causes pain. The instrument was developed by Stevens, Johnson, Petryshen et al, with internal consistency validity data using Cronbach's alpha = 0.76-0.59. PIPP is used in infants between the ages of zero to three months, both underweight and underweight. The PIPP has 7 indicators that represent a multidimensional pain scale because it assesses physiological, behavioral, and gestational parameters. PIPP values range from 0 to 18, i.e. if less than 6 indicate no pain, values between 7 to 12 show moderate pain, and values over 12-18 indicate severe pain. Conducting a PIPP pain scale assessment is first by determining gestational age, then evaluating the value of 15 seconds.
before the blood sampling procedure begins, and noting the baseline data of heart rate and oxygen saturation. Observing the infant for 1 minute and 5 minutes after the blood sampling procedure, and summing up all scores of facial expression changes (eyes closed, forehead wrinkles, nasolabial folds) and physiological parameters (heart rate and oxygen saturation) (Stevens, Johnston, Petryshen, & Taddio, 1996).

**Intervention**

The intervention group was given a combination of breastfeeding and effleurage massage by a gentle sweep on the area around the blood sampling action (from the wrists / feet to the base of the arm / thigh on the area of the invasive action) within 2 minutes before blood sampling and up to 5 minutes after the procedure. Pain response was observed using PIPP scale started from 15 seconds before action up to 5 minutes after action. In the control group the infant was put in a lying position on the action table at the time of the blood sampling.

**Data analysis**

Univariate analysis was performed with the aim to describe data in mean and median in the form of frequency distribution table.

**Ethical considerations**

This study has been approved by the Research Ethics Committee of Poltekkes Kemenkes Semarang with approval number 111 / KEPK / Poltekkes-Smg / EC / 2017.

**RESULTS**

Based on table 1 it can be seen that the age of respondents in the intervention group was mostly at the age of 37, 39 and 40 weeks respectively as many as 13.33% (4 respondents), while the majority of respondents in the control group had gestational age of 39 weeks (16.67% (5 respondents) respectively. The p-value was 0.743 (> 0.05), which indicated that both intervention and control group were homogeneous.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
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<th>Total</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N=15</td>
<td>N=15</td>
<td>N=30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Gestational age</td>
<td>37 years</td>
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<tr>
<td></td>
<td>38 years</td>
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*Levene’s Test*

<table>
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<td>N=15</td>
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<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
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</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>8</td>
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<td></td>
<td>Female</td>
<td>7</td>
<td>23.3</td>
<td>7</td>
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</table>

*Chi Square Test*

Table 2 shows that the respondents in the intervention and control group consisted of males (26.7%) and females (23.3%) with p-value 1.000 (>0.05), which indicated that the gender of respondents in both groups were homogeneous.
Table 3 Pain level in the intervention and control group in one minute and five minutes observation

<table>
<thead>
<tr>
<th>Group</th>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1 minute</td>
<td>15</td>
<td>7.47</td>
<td>8.00</td>
<td>1.356</td>
<td>4 - 9</td>
</tr>
<tr>
<td></td>
<td>5 minutes</td>
<td>15</td>
<td>3.53</td>
<td>3.00</td>
<td>1.922</td>
<td>1 - 7</td>
</tr>
<tr>
<td>Intervention</td>
<td>1 minute</td>
<td>15</td>
<td>10.80</td>
<td>11.00</td>
<td>1.897</td>
<td>7 - 14</td>
</tr>
<tr>
<td>Control</td>
<td>5 minutes</td>
<td>15</td>
<td>6.00</td>
<td>6.00</td>
<td>1.852</td>
<td>3 - 10</td>
</tr>
</tbody>
</table>

Based on Table 3 in the intervention group (combination group of breastfeeding and Effleurage massage), the average response of the respondent's pain measured at 1-minute observation was 7.47, with the standard deviation of 1.356. The lowest pain response was 4 and the highest pain response was 9. The analysis result for the average of the respondent's pain measured on the 5-minutes observation was 3.53 with a standard deviation of 1.922. The lowest pain response was 1 and highest pain response was 7.

In the control group, the average response of the respondent's pain measured at 1-minute observation was 10.80, with the standard deviation of 1.897. The lowest pain response was 7 and the highest pain response was 14. The result of the analysis for the average of respondent pain measured on the 5-minutes observation was 6.00, with a standard deviation of 1.852. The lowest pain response was 3 and highest pain response was 10.

Table 4 Category of pain level in the intervention and control group in one minute and five minutes observation

<table>
<thead>
<tr>
<th>Pain Level</th>
<th>Category</th>
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<th>Control N=15</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>1-minute observation</td>
<td>No pain</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Moderate pain</td>
<td>12</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Severe pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5-minutes observation</td>
<td>No pain</td>
<td>14</td>
<td>93.3</td>
</tr>
<tr>
<td></td>
<td>Moderate pain</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Severe pain</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4 shows that the pain level at 1-minute observation was mostly in the moderate pain category both in the intervention group (80%) and control group (86.7%), while at 5-minutes observation there was a significant reduction of pain in both groups, which the intervention group showed no pain (93.3%) and moderate pain (6.7%), and the control group with no pain (60%) and moderate pain (40%).

**DISCUSSION**

Gestational age is a variable that affects infant in response to pain. On the measurement of pain level values based on the PIPP scale (Premature Infant Pain Profile), gestational age is given a separate score with a maximum value of 3 that distinguishes the total score in premature and mature infants with maximal value in premature babies of 21 and mature infant of 18.

At 20 weeks, gestational age, receptor and cortical neurons have developed; at gestational age of 24 weeks, cortical synapses arise; and at 30 weeks of gestation, myelinization occurred on pain line and the development of the spinal cord synapse with sensory fibers (Lissauer, Fanaroff, Miall, & Fanaroff, 2018).
In this study all respondents had gestational age in the range of 37-40 weeks, which myelinization on the pain line and sensory fibers have grown.

The results of this study revealed that the intervention group given a combination of breastfeeding and effleurage massage on 1-minute observation was in the category of moderate pain level and no pain, while the control group was in the category of moderate pain and severe pain. Each group experienced moderate pain at the most. This suggests that within 1 minute there has been a decrease in the pain response in which the intervention response group has a higher reduction in pain than the control group.

While in 5-minute observation it is showed that the intervention group and control group were mostly in the category of no pain, and the severe pain category in both groups was no longer found. However, the control group still had moderate pain. This indicates that within 5 minutes the pain response has been largely returned to the condition prior to the stimulation of pain.

It is indicated that breastfeeding and effleurage massage group is better to reduce pain (7.47) lower than pain in the control group (10.80) for 1-minute observation and also for 5–minutes observation which the intervention group showed a better result in reducing pain (3.53) than the control group (6.00).

Breastfeeding can reduce the pain response in infants because breast milk can make sensory perception stimuli with the sweetness of lactose. This stimulus will be sent to the cerebral cortex, which will then be forwarded to the hypothalamus. The hypothalamus will secrete corticotrophin-releasing factor (CRF) in which the CRF will activate the pituitary to secrete endogenous opiates i.e. β-endorphin and encephalin. Both opiate peptides serve as a potent pain killer so that the pain response will be reduced. Research found that breast milk is quite effective in reducing the pain response during minor invasive procedures in the mature infant (Carabajal et al., 2008).

According to Potter, breastfeeding affects the sympathetic nervous system that stimulates the adrenal medulla so catecholamine decreases. The decreased catecholamine causes dilated blood vessels to decrease the pulse and blood pressure (Perry & Potter, 2005). Many benefits are found during breastfeeding, in addition to the sweet taste that can induce endogenous opioids to have a positive effect on the pain response.

Breast milk also contains a high concentration of tryptophan, which is a melatonin precursor. Melatonin hormone is produced by the perineal gland of the brain that has the function of helping regulate other hormones, maintaining the rhythm of the circadian body and being antioxidants. Melatonin has been shown to increase beta-endorphin concentration and allows it to be a mechanism of nociceptive effect of breastfeeding (Hegar, Suradi, Hendarto, & Partiwi, 2008).

Another method of pain reduction is the effleurage massage in which the action may modulate pain impulses in the gelatinous substance in order to provide inhibition to the transmission of pain impulses. The effects of effleurage massage cause a relaxing effect.

Gate Control Theory explains that in every dorsal horn of the spinal cord there is a gate-like mechanism that inhibits or facilitates the spinal cord signaling before it causes perception and response to pain. Large diameter nerve fibers tend to close the door so that pain signals cannot enter through the spinal cord whereas small diameter nerve fibers tend to open the door so that pain signals can enter through the spinal cord to the brain. This theory shows that pain signals can be affected by stimulating the location of peripheral pain such as by bringing a touch signal (mechanoreceptor) and by stimulating opioid mediated exposure so that the door closes and ultimately reduces the pain (Nathan, 1976).
The results of this study were also supported by Philips research of 96 neonates who did blood sampling found that the percentage of duration of crying in the group of infants who were given breast milk is lower than the group of infants who were pacifier, which was 33% compared to 66% (Phillips, Chantry, & Gallagher, 2005). While the result of this study was in contrast with the research conducted by Jain on 23 infants (birth weight 795-2507 g), which showed no adverse physiological effects of massage on respiration rate, oxygen saturation and cortisol in blood sampling (Jain et al., 2006).

However, this study combines the two interventions with stronger results. It is because breast milk has the stimulating effect of opioids that stimulates the baby’s comfort while massage provides a relaxing effect and activates the stimulated gate control system at the same time, which make it more effective in reducing the pain response in infants.

LIMITATIONS
Respondents who were given a blood-sampling stimulus might have been exposed to other types of pain stimulus such as injection of vitamin K injection that must be given to newborns. The experience of previous pain exposure might also affect the patient's pain response, which considered as the limitation of the study

CONCLUSION
Based on the research result, it was concluded that the mean score of PIPP infant pain response in the intervention group given a combination of breastfeeding and effleurage massage group was lower than control group either at 1 minute or 5-minute observation. The researchers further suggest comparing both groups to find out how much effectiveness of breastfeeding and massage effleurage in reducing infant pain so it can be used as an alternative in reducing pain due to invasive actions in infants.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

References


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EFFECT OF LO’I KARANA ON PAIN LEVEL IN POSTPARTUM MOTHERS

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Email: rinhendari@yahoo.co.id

Abstract
Background: Lo’i karana is one type of traditional therapies that has existed for more than one hundred years in the midst of society of Bima and Dompu to overcome the discomfort due to labor. However, lack of research has been conducted to examine its effect on pain in postpartum mothers.
Objective: To examine the effect of Lo’i karana on muscle pain in postpartum mothers.
Methods: This was a quasi-experimental study with posttest only control group design. Thirty mothers were selected using purposive sampling, which 10 assigned in 3 groups (standard-dose group, minimal-dose group, and maximal-dose group). Wong-Baker Faces Pain rating scale was used to measure pain on day 1 and day 3. Kruskal-Wallis Test and Mann Whitney test were used for data analysis.
Results: There were significant effects of Lo’i karana in minimal, standard and maximal dosage on pain level in the first day (p=0.004) and the third day (p=0.009) in postpartum mothers. The results revealed that the higher doses were used for the treatment, the less pain of the mothers would be.
Conclusion: Lo’i karana has a significant effect in reducing pain level in postpartum mothers. It is recommended that this intervention can be applied as a part of nursing intervention in caring postpartum mothers.

Keywords: effectiveness; Lo’i karana; pain; postpartum pervaginam

INTRODUCTION

Traditional herb is one of the potential development in the field of health, so its existence needs to be explored, developed and utilized in the framework of equity of service in the field of health (Pribadi, 2015). Some traditional ingredients that are efficacious to overcome the discomfort due to the process of birth are a herb of Java chili, cloves, ginger, nutmeg and kencur (Handayani, 2003). Java Chili has long been known to the public as a traditional herb. Chili pepper contains piperine spicy substances, which have antipyretic power, analgesic, anti-inflammation, and the central nervous system suppression. In some women, Java chili’s also believed to increase uterine contractions that affect the process of cleaning the uterus after giving birth. Clove (Syzygium aromaticum) is a flavorful dried flower stalk that also serves as a warmer, as well as ginger and nutmeg seeds that can provide a sense of warmth when it is supplied to the body (Lentera, 2002).
Until today, there has been little systematic research on postpartum morbidity, except for cases of postpartum depression. Macarthur et al in Birmingham first documented physical morbidity during the puerperium on a large scale of 8, largely unreported for health personnel and continued after the end of routine maternity care at the sixth week. The study of 11,000 women identified the spread of morbidity that begins after delivery. As many as 47% of women reported experiencing one problem, or more than 25 health problems existed right after delivery and lasted more than six weeks. This suggests that very few women report these health problems to their doctors (MacArthur, Lewis, & Knox, 1991). Glazner et al in a one-year randomized study at Grampian, Scotland, found that 76% of women had at least one health problem eight weeks after delivery (Glazener et al., 1995). The study of Bick & Macarthur that examines the severity and impact of postpartum morbidity, found that although some health problems were mild or only occasionally presented, many women suffered symptoms every day and this has significant impact on various aspects of life woman (MacArthur et al., 2002).

In the postpartum period, not a few mothers experience problems of discomfort. Comfort is the central concept in meeting the basic needs of clients as one of the goals of nursing care. Through comfort and action for comfort, nurses can provide strength, support, encouragement and leverage (Perry & Potter, 2005). The discomfort of muscle pain especially during postpartum is one of the signs that must be watched and dealt immediately because it affects the needs of rest and sleep where postpartum is recommended to have enough rest to reduce fatigue. Less rest can result in reducing the amount of breast milk, slowing the involution, which can eventually lead to bleeding and depression (Perry & Potter, 2005). The impact of the discomfort of muscle pain in the puerperal mother can affect various aspects of woman's life, thus alternative solution is needed, which is safe, affordable, and pleasant. One of the alternative solutions is the utilization of traditional herb of Lo'i Karana.

Lo'i karana derived from word “Lo’i” and “Karana”. Lo’i means medicine, and Karana means warmed potion. Lo'i karana in Mbojo tribe (Bima) is a traditional warming herb that is often smeared on the body, usually its use is dressed after heavy work, during cold temperature, and when having muscle pain and postpartum complaints (Syukur & Hernani, 2001). In Bima, the use of this herb on postpartum mother has long been done since hundreds of years ago and still remains an herb of choice to reduce the discomfort of muscle pain in postpartum, but there has been no research conducted about the effect of Lo’i karana. The results of preliminary study conducted on 10 postpartum mothers on March 2016 in Ambalawi Public Health Center using interview method, it was found that 7 mothers (70%) experienced comfort problems, especially muscle pain. Of 5 mothers who experienced muscle pain were using mixed ingredients of Java chili, clove, ginger and kencur to treat the complaints, the results showed that 4 mothers had lower pain after 1-2 hours, while 1 person claimed to require treatment many times and adequate rest to relieve complaints of muscle pain, and 2 mothers only consumed drugs from health personnel said that they felt muscle aches for days accompanied by nausea and headache. Of 3 postpartum mothers who did not experience muscle pain complaints, they also use Javanese chili just to warm and refresh the body. The aim of this study was to examine the effect of Lo’I Karana on muscle pain in postpartum mothers.

METHODS

Study design
This was a quasi-experimental study with posttest only control group design.

Setting
This research was conducted from July to November 2016 in the working area of Ambalawi Public Health Center of Bima.
Sample and sampling
The population in this study was all mothers with postpartum pervaginam in Ambalawi Public Health Center area from July to November 2016, which amounted to 78 people. The sample was 30 mothers selected using purposive sampling, which 10 assigned in 3 groups (standard-dose group, minimal-dose group, and maximal-dose group). The inclusion criteria of the sample were: normal postpartum mothers in day 1 to day 3, with only child, did not take anti-pain medication for 3 days, and were not sensitive to Lo’i karana material. The exclusion criteria were postpartum mothers with action (vacuum, extracellular forceps, Caesarea section and postpartum complications such as pre-eclampsia, eclampsia, hemorrhage, cardiac abnormalities or other conditions requiring serious treatment).

Intervention
The first group was given a standard treatment of Lo’i Karana consisting of 10 grams of dried Java chili, 5 grams of dried cloves, 5 grams of dried nutmeg, and three of them fried without using oil, plus 10 grams of fresh ginger, 10 grams of kencur, 5 grams of turmeric and 150 grams of rice white rice soaked. All ingredients pounded until smooth and then covered in the neck and all over the body except the breast and genital area, and abdominal area until the back was wrapped with octopus’ cloth, this was done after a morning shower for 1 day or until a sense of muscle aches was gone.

The second group was treated with Lo’i Karana with minimum dose consisting of: 5 grams of dried Java chili, 2 grams of dried clove fruit, and 2.5 grams of dried nutmeg. All of them fried without using oil, plus 5 grams of fresh ginger, 5 grams of kencur, 2 grams of turmeric and 100 grams of soaked white rice. The process is the same as the standard dosage.

The third group was given the treatment with Lo’i karana with maximum dose, namely: 15 grams of dried Java chili, 10 grams of dried clove, and 7.5 grams of dried nutmeg, which all of them fried without using oil, plus 20 grams of fresh ginger, 20 grams of kencur, 10 grams of turmeric and 200 grams of soaked white rice. The process is the same as the standard dose.

All materials were taken from the crops grown by the people in Wera Regency. The results in each group were analyzed to see which doses were most effective in reducing pain. The intervention was implemented by 3 therapists, assisted by 12 midwives who had been trained on how to implement Lo’i Karana and how to observe the pain reaction with pain scale.

Instruments
Wong-Baker Faces Pain rating scale was used to measure pain on day 1 and day 3.

Ethical clearance
This study has been approved by the Research Ethics Commission of Health University of Mataram with approval number: 116 / UN18.8 / ETIK / 2016.

Data analysis
Data analysis used in this research was descriptive and inferential analysis. Descriptive analysis was performed by presenting data through frequency distribution, while inferential analysis used was Kruskal-Wallis Test to examine the effect of Lo’i Karana on pain in postpartum mother, followed by Mann Whitney test to see differences in dose of Lo’i karana on pain scale.

RESULTS
Table 1 shows that the majority of the respondents aged 20-35 years (93.3%), had senior high school level background (56.7%), worked as housewives (80%), and parity of the second child.
Table 1 Frequency distribution of characteristics of respondents based on age, education, occupation, parity, birth baby weigh, and dosage of intervention

<table>
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<tr>
<th>Category</th>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2500 gram</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>2500 - 4000 gram</td>
<td>29</td>
<td>96.7</td>
</tr>
<tr>
<td><strong>Dosage of intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal dose</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>Standard dose</td>
<td>10</td>
<td>33.4</td>
</tr>
<tr>
<td>Maximal dose</td>
<td>10</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Table 2 Frequency distribution of pain level in day I and day III

<table>
<thead>
<tr>
<th>Pain level</th>
<th>Day I</th>
<th>Day III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>No pain</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mild pain</td>
<td>23</td>
<td>76.7</td>
</tr>
<tr>
<td>Severe pain</td>
<td>7</td>
<td>23.3</td>
</tr>
</tbody>
</table>

Table 3 Pain level in the groups of standard, minimum and maximum dose on day I and day III

<table>
<thead>
<tr>
<th>Group</th>
<th>Pain scale day I</th>
<th>Pain scale day III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>Standard-dose group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mild pain</td>
<td>9</td>
<td>90</td>
</tr>
<tr>
<td>Severe pain</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Minimal-dose group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mild pain</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Severe pain</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td><strong>Maximal-dose group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mild pain</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Severe pain</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 2 shows that on day 1 there were 23 postpartum mothers (76.7%) had mild pain, while on the day III 24 mothers (80%) had mild pain and 2 mothers (6.7%) had severe pain. As shown in the table, 90% of respondents in the standard-dose group had mild pain in day I, and 100% of them had mild pain in day III. In the minimal-dose group there were 40% of respondents had mild pain and 60% with severe pain in day I, and in day III 80% of respondents had mild pain and 20% with severe pain. And in the maximal-dose group 100% of participants had mild pain and in day III there were 60% with mild pain and 40% with no pain.

Table 4 Effect of Lo’i karana on pain level using Kruskal-Wallis test

<table>
<thead>
<tr>
<th>Pain</th>
<th>Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day I</td>
<td>Minimal-dose group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard-dose group</td>
<td>0.004*</td>
</tr>
<tr>
<td></td>
<td>Maximal-dose group</td>
<td></td>
</tr>
<tr>
<td>Day III</td>
<td>Minimal-dose group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard-dose group</td>
<td>0.009*</td>
</tr>
<tr>
<td></td>
<td>Maximal-dose group</td>
<td></td>
</tr>
</tbody>
</table>

Table 5 Differences of pain level in in minimal, standard and maximal-dose groups in day I and day III

<table>
<thead>
<tr>
<th>Minimal-dose group and Standard-dose group</th>
<th>Pain level</th>
<th>p-value</th>
<th>Mean rank (Minimal-dose group)</th>
<th>Mean rank (Standard-dose group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day I</td>
<td>0.022</td>
<td>13.00</td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>Day III</td>
<td>0.146</td>
<td>11.50</td>
<td>9.50</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard-dose group and Maximal-dose group</th>
<th>Pain level</th>
<th>p-value</th>
<th>Mean rank (Standard-dose group)</th>
<th>Mean rank (Maximal-dose group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day I</td>
<td>0.317</td>
<td>11.00</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Day III</td>
<td>0.029</td>
<td>12.50</td>
<td>8.50</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minimal-dose group and Maximal-dose group</th>
<th>Pain Level</th>
<th>p-value</th>
<th>Mean rank (Minimal-dose group)</th>
<th>Mean rank (Maximal-dose group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day I</td>
<td>0.004</td>
<td>13.50</td>
<td>7.50</td>
<td></td>
</tr>
<tr>
<td>Day III</td>
<td>0.015</td>
<td>13.10</td>
<td>7.90</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows that there were significant effects of Lo’i karana in minimal, standard and maximal dosage on pain level in day I (p=0.004) and day III (p=0.009) in postpartum mothers. While Table 5 shows that there was a significant difference in pain level on day I between minimal-dose group (mean 13) and standard-dose group (mean 8), which means the standard dose was more effective in reducing the pain level compared with minimal dose; while on the third day there was no difference in pain level. It also showed that there was no significant difference in pain level on day I between standard-dose group and maximal-dose group, whereas on day III p-value was 0.029 (p <0.05), which means there was a significant difference in pain level on day III between standard-dose group and maximal-dose group. The mean rank value showed maximal doses was more effective in reducing pain on day III compared to standard dose.

In addition, there was a significant difference in pain level on day I between minimal-dose group (mean 13.50) and maximal-dose group.
Similar with pain level in day III, which the mean rank value of pain in minimal-dose group was 13.10 and in maximal-dose group was 7.90, which indicated that maximal dose was more effective in reducing pain level on day I and III compared to minimum dose.

**DISCUSSION**

The results of this study showed that there were significant effects of Lo’i karana (with minimal standard and maximal dose) on pain levels in postpartum mothers. This study suggests that the higher doses used for the treatment, the better effect in reducing pain will be.

The differences in effectiveness in reducing pain from the three groups were due to the different doses given in each group. Lo’i karana with maximal dose gives a very warm effect on the mother’s body, so that many respondents got sweat and felt fresher and had new energy. The treatment with Lo’i karana with maximum dose is interesting to be understood and scrutinized further because of its pharmacological effects in reducing the pain among postpartum mothers.

Lo’i karana consists of core ingredients, namely: Javanese chili seeds, cloves and dried nutmeg, ginger, kencur and turmeric which are efficacious to contain analgesic, anti-inflammatory and antipyretic properties, so that when combined can reduce postpartum pain. Study stated that piperine (Java chili) has antipyretic effect, analgesic, anti-inflammatory, and central nervous system suppression effect (Rukmana, 2003). Ginger has a primary efficacy for blood circulation; while the benefits of cloves, nutmeg, and turmeric are as analgesics, and clove oil content can be a painkiller. And if mothers get fever or not feeling well, it is advisable to consume kencur. The heat effect of this medicinal plant is very good for sweating and helps to nourish the body. It is also indicated that the basic ingredients used in Lo’i karana are useful for antiseptics, aromatherapy, antioxidants and anti-microbial (Nasution, 2009).

The results of this study were also in line with Sembiring stated that the basic ingredients of Lo’i karana is effective for postpartum care as it can reduce post-partum discomfort and increase the freshness of mothers after childbirth. It is revealed that traditional medicine is still recognized and can answer various health problems. Traditional medicine is also a well-known treatment system for its devotees and believed to be safer than modern medicine. Traditional herbs as one of the treatment efforts that have been widely known and used by the community with the aim of treating minor ailments, preventing disease, maintaining endurance and health of the body including for the care of postpartum mothers (Sembiring, 2012).

Lo’i karana treatment is an integral part of the socio-cultural environment that has values that are worth maintaining and enhanced as well as contributing positively to health improvement efforts. Lo’i karana is one type of therapies that has existed for more than one hundred years in the midst of society of Bima and Dompu that still survive, even growing rapidly in the community because of its effective properties and materials are easy to obtain and affordable.

**CONCLUSION**

It can be concluded that there was a significant effect of Lo’i karana on pain level in postpartum mothers. It is recommended that this intervention can be applied as a part of nursing intervention in caring postpartum mothers.

**Declaration of Conflicting Interest**

None declared.

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Author Contribution
All authors contributed equally in this study.

References


THE INFLUENCE OF SUNDANESE ZITHER (KACAPI) MUSIC THERAPY ON ANXIETY LEVELS IN PRE-CARDIAC CATHETERIZATION PATIENTS

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Abstract

**Background:** Patients who will have cardiac catheterization mostly experience anxiety. Unresolved anxiety may have a harmful effect such as increasing frequency of heart, breathing and blood pressure as well as risks of complication. Music is considered effective in reducing anxiety.

**Objective:** This study aims to examine the effect of Sundanese zither (kacapi) music therapy on anxiety level in pre-cardiac catheterization patients.

**Methods:** This was a quasi-experimental study. Fifty-six respondents were selected using consecutive sampling technique, which 28 respondents assigned in the experiment group and control group. Anxiety was measured using Hamilton Anxiety rating Scale (HARS). Data were analyzed using Wilcoxon and Mann-Whitney test.

**Results:** The results showed an average decrease in anxiety value in the experiment group of 10.28, and in the control group of 3.25. Mann-Whitney test results obtained p value <0.001, which indicated that there was a significant difference of mean decrease between the experiment group and the control group.

**Conclusion:** This study proves that the intervention of Sundanese kacapi music significantly decreasing anxiety levels (p <0.001) in pre-cardiac catheterization patients. It is suggested that Sundanese kacapi music can be used as an alternative therapy in the independent nursing interventions.

**Keywords:** anxiety; music therapy; Sundanese, zither; kacapi; cardiac catheterization

BACKGROUND

Cardiovascular disease is multifactorial disease. The most common type of cardiovascular disease is Coronary heart disease (CHD) as the leading cause of death in the next fifteen years. CHD is caused by atherosclerosis. The ways to identify and diagnose the presence of CHD are from non-invasive techniques, such as electrocardiography (EKG), to invasive examination, such as coronary arteriography (cardiac catheterization). Cardiac catheterization is done to restore the flow to the blocked blood vessels, to open the stenotic heart valve (narrow) and to repair congenital damage. However, patients who will have cardiac catheterization mostly experience anxiety (Bonow, Mann, Zipes, & Libby, 2011; Mann, Zipes, & Peter Libby, 2014).

Anxiety experienced by the patients is caused by lack of accompanying friend, delivery of the first procedure, lack of satisfactory...
information and length of waiting time. If anxiety is not resolved, then it will have a harmful effect, such as extending cardiac catheterization time, increasing the risk of complications, increasing heart frequency, breathing and blood pressure (Andri, 2007; Safaria & Saputra, 2009). Thus, anxiety management of this patient need to be performed.

Anxiety management can actually be done through pharmacological and non-pharmacological therapies. The proven and useful non-pharmacological management is an integrated therapy in the form of complementary and alternative therapies, especially in anxious management. Non-pharmacological management can make body more relaxed and make sleep better. This non-pharmacological therapy can be implemented by nurses independently, one of which is the intervention of music therapy, such as Sundanese zither (kacapi) music therapy (Andri, 2007; Mulidah & Trivanto, 2009; Safaria & Saputra, 2009; Weeks & Nilsson, 2011). The use of Sundanese kacapi music as a therapy in cardiac catheterization patients can improve the meaning of transcultural nursing and values in the application of nursing care to patients so as to deepen the cultural values in society. Listening to Sundanese kacapi music in Central Java Indonesia can enhance the development of specific and universal culture-oriented nursing practices, so that the wider community recognizes and accepts the cultural diversity in Indonesia as well as to improve local wisdom (Andri, 2007).

Music therapy can increase emotional coping and positive affective status, gain psychological satisfaction, improve well-being during surgery, and have an effect on decreased blood pressure, pulse, breathing, heart frequency, decrease hormones. Music can lower the stimulus of the sympathetic nervous system. When the music is playing, the music in the form of sound waves is received by the earlobe and then will go into the external auditory canal and then the sound waves vibrate the tympanic membrane and continued to vibrate the hearing bones of malleus, incus and stapes and proceed to the house snail or cochlea then received by the auditory nerve (the cochlear vestibule nerve) and will be received by the brain (temporal lobe) as a sound sensation. The sound produced by the music will stimulate the expenditure of endorphins that will affect the working mechanism of the limbic system in the amygdala in the emotional setting and mood of feeling. If the regulation of emotions by the amygdala can be well organized, then one can control the emotions well and feel no anxiety. Listening to music with slow rhythm will also reduce the release of catecholamines into the blood vessels, so the concentration of catecholamines in the plasma becomes low. It can also activate the sympathetic and cause the release of stress hormones that result in relaxing the body (Weeks & Nilsson, 2011).

There are several studies have been conducted in regards to the use of Sundanese kacapi music, such as Supriadi’s research that examined the influence of Sundanese flute kacapi music in decreasing blood pressure in elderly in Yogyakarta (Supriadi, Hutabarat, & Monica, 2015). Some studies used different kind of music such as classical and Javanese music to reduce anxiety in pre-catheterization patients (HATI, Wibowo, & FarK, 2010). However, lack of studies examines the impact of Sundanese kacapi music in decreasing anxiety in pre-catheterization patients.

**METHODS**

**Study design**
This was a quasi-experimental study with pretest posttest control group design.

**Sample**
Fifty-six respondents were selected using consecutive sampling technique, which 28 respondents assigned in the experiment group and control group. The inclusion criteria of the sample were: 1) Patients who would have cardiac catheterization, 2) Aged 40-65 years, 3) Willing to follow research and listen to Sunda kacapi music, 4) Already got explanation about pre-catheterization...
procedures, 5) Never have other relaxation techniques such as deep breathing relaxation, reciting the Qur'an or any other techniques. The exclusion criteria were: 1) Patients who got antidepressant therapy, and 2) Patients who had hearing loss.

Instrument
Anxiety was measured using Hamilton Anxiety rating Scale (HARS) (Sulistiyo et al., 2017; Yazici, Demir, Tanriverdi, Karaagaoglu, & Yolac, 1998), which was developed by Max Hamilton in 1959 with good validity and reliability. The scale consisted of 14 items with 5 levels of score (between 0-4). The anxiety level was classified based the number of scores summed. It refers to no anxiety if score <14, mild anxiety if score 14-20, moderate anxiety if score 21-27, and severe anxiety if score > 28. Anxiety was measured before and after given intervention.

Intervention
MP3 and headphones were used to listen the music and each patient had the same brand. The music was given for 15 minutes and between 1-2 hours before the patient performed cardiac catheterization by the researchers accompanied by nurses in the ward. Sundanese kacapi music is music in instrumental form and has low tones with strings and with minimal bass percussions. The music was given in a slow tempo with 128 kilos bytes per second (kbps) and 70 decibel (Db). This music has been validated in Semarang Music Studio; with the type of song was the melody from Ayun Ambing song using pentatonic scales that consisted of five tones only. The patterns of the melody used octaves (jumping from low to high on the same note). Audio in the song of Ambun Ambing was 77dB (left) and 88 dB (right) recorded with a stereo system. There were R and L mark to be easy for respondents to put on. The form of instrumental song using the tempo of 129.1 beats per minute means it has slow tempo with the overall tap of 731 with 128 kbps voice quality. The overall song Ayun Ambing did not use human voice, but using only the sound of Sundanese kacapi instruments (Supriadi et al., 2015). This musical intervention was given only to the experiment group, while control group was only given a standard therapy from the hospital. During therapy, the researchers and nurses assure there would be no interruption.

Data analysis
The data analysis of this research consisted of univariate and bivariate analysis. Univariate analysis was used to describe mean and median of the data. While bivariate analysis consisted of Wilcoxon and Mann-Whitney test to examine the effect of Sundanese Kacapi Music on anxiety levels, and compare the effect between the experiment and control group.

RESULTS
Table 1 shows that the mean of anxiety level in the experiment group during pretest was 32 and decreased to 18.46 during posttest. Wilcoxon test obtained value <0.001, which indicated that there was significant difference in anxiety level between pretest and posttest. Similar with the control group, there was a significant decrease in the mean of anxiety level between pretest (28) and posttest (26.42) with p-value <0.001. However, the experiment group shows the greater decrease in anxiety level compared to the control group.

Table 1 Comparison of anxiety level before and after intervention between the experiment and control group using Wilcoxon test

<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD or Median (min-max)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>31 (15-48)</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>Posttest</td>
<td>18.46 ± 7.99</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>28 (13-43)</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>Posttest</td>
<td>26.42 ± 7.67</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 Mean difference between pretest and posttest in the experiment and control group using Mann-Whitney

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean ± SD or Median (min-max)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>10.28 ± 4.96</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>Control</td>
<td>2.50 (0-9)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that the mean difference of anxiety level between pretest and posttest in the experiment group was 10.28, while mean difference of anxiety level in the control group was 2.50. Mann-Whitney value obtained p-value <0.001 which indicated that there was a significant difference in the mean level of anxiety. It could be said that Sundanese Kacapi music therapy was effective in reducing anxiety levels compared to the intervention in control group.

**DISCUSSION**

Findings of this study indicated that as many as 56 respondents experienced different anxiety at the time of pretest. The experiment group was categorized in severe anxiety level, which the mean of anxiety score was 28.75 ± 11.20; while the control group was also categorized in severe anxiety level, which the mean of anxiety score was 29.67 ± 6.62.

Several risk factors may also increase anxiety in preoperative patients, such as length of stay, smoking history, mild psychiatric disorders and negative perceptions of preoperative procedures (Andri, 2007; Safaria & Saputra, 2009). Therefore, before undergoing surgery, the patient should have an explanation regarding the operation. The effects of anxiety include prolonged cardiac catheterization, increased risk of complications, and worsening heart conditions. Anxiety in this study includes feeling tense, pounding, depressed in the chest, muscle tension, insomnia, and frequent urination (Taylor-Piliae & Chair, 2002).

Anxiety experienced by patients ranging from moderate to severe anxiety. Cardiac catheterization patients basically have anxiety with mild, moderate, severe anxiety levels in both the experiment group and the control group. Actually, to overcome the problem of anxiety in addition to being given complementary therapy is also from the individual himself as well the coping strategy, whether the individual ultimately accepts by himself or is given a health education.

Previous study explains that women and men do not differ in their preoperative anxiety (Karanci & Dirik, 2003). It is explained that the anxiety of patients in a special unit such as in the heart unit may be different, due to concerns about his condition and a concern to the professionalism of care (Castillo, Aitken, & Cooke, 2013). Findings of this study showed that there was difference in anxiety value in the experiment and control group before and after intervention (p <0.001), which means that after the intervention of the Sundanese kacapi music there was an anxiety change in the experiment group, while in the control group after the standard action of the hospital was implemented, the anxiety of the respondents also changed significantly.

However, the results of this study also showed that there were differences in anxiety values between the experiment group and the control group (p <0.001) with an average change of 3.25 ± 2.86 in the control group and 10.28 ± 4.96 in the experiment group with the difference in the anxiety value between the two groups reaching 7.03. Anxiety reduction in this study was greater than that of previous study, in which the combination of music and emotional coping given for 30 minutes in cardiac catheterization patients was able to reduce anxiety. In addition, the study also showed a decrease in anxiety greater than that of another study which music was administered for 20 minutes in a preoperative patient.

The result of this study shows that there was a difference between the experiment group and the control group, but the change of respondent's anxiety value in the experiment
group was bigger than the control group, which is similar to the previous research (Ghetti, 2013). In the experiment group there were 28 respondents experiencing decreased anxiety. This indicates that anxiety-relieving efforts using Sundanese kacapi music provide a better effect for the patient, in which both the experiment group and the control group were still given a comfortable environment and treatment process based on the standard of the hospital.

On the other hand, of 28 respondents in the control group, there were 7 respondents who did not experience decreased anxiety, and 11 patients experienced decreased anxiety. The decrease in anxiety occurring in the control group may be due to the presence of other complementary interventions such as in-patient respiratory relaxation performed by the respondent or guided by the nurse, or other relaxations provided such as family support and caring from nurses, then the patients will eventually accept that they will have cardiac catheterization. Although some of these factors may also be experienced by the experiment group. However, the results of statistical tests indicated that the experiment group and the control group have the same or homogeneous data variance that can be ascertained that the decrease in anxiety occurring in the experiment group was due to the influence of the intervention of the Sundanese kacapi music.

As quoted by Susan from Halm and Novaes that the patient's anxiety experience is not only due to the physiological disorder that occurs, but also because of the perceived threat associated with threats from the treatment room environment (Frazier et al., 2002). The condition is corroborated by systematic review results, which concluded that music is effective in reducing anxiety in patients in hospital, but cannot reduce anxiety during invasive or unpleasant procedures (Evans, 2002). And the other studies explain that the effect of music on anxiety is not distinguished by gender and also has no impact on age. All patients are expected to focus on listening to music so as to benefit from the music therapy provided (Ottaviani, Jean-Luc, Thomas, & Pascal, 2012).

According to Kolcaba's theory, the rhythm, sound, and harmony of music create comfort, when the patient listens to music, the patient can feel relaxed (Green & Setyowati, 2004). This is explained by a neurophysiologic mechanism. Music that is played to patients who are experiencing preoperative anxiety has stimulated the limbic system, which will stimulate phenylethylamine expenditure. The substance may affect the patient's mood (Ebnesahidi & Mohseni, 2008). The results of this study indicated that Sundanese kacapi music was proven to effectively reduce the anxiety of patients. Like the mechanism of pain relief, the lilting and peculiar rhythms of the Sundanese kacapi music can provide a feeling of calm and relaxation because the music can affect the workings of the sympathetic and parasympathetic nervous system (American Music Therapy Association, 2010; Frazier et al., 2002; Setyawan, Susilaningshih, & Emaliyawati, 2013).

Previous research has suggested that Sundanese kacapi music can affect brain waves through FFR mechanisms that are believed to be healthy for 5%-10% of nerve cells (Cooke, Chaboyer, & Hiratos, 2005; Price & Wilson, 2005). The Sundanese kacapi music given in this study was for 15 minutes. Study shows that musical interventions given for at least 15-20 minutes can induce relaxation (Chlan, 2009; Cutshall et al., 2011). The music is proven to have sedative effects on patients who listen so that the anxiety of patients decreased.

CONCLUSION

There was a significant difference in anxiety levels between the experiment and control group. Sundanese kacapi music therapy was effective in reducing anxiety level in pre-catheterization patients. It is suggested that Sundanese kacapi music can be used as an alternative therapy in the independent nursing interventions.
Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

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THE LIVED EXPERIENCE OF PATIENTS WITH PRE-DIALYSIS CHRONIC KIDNEY DISEASE: A QUALITATIVE STUDY

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Abstract
Background: Chronic kidney disease is identified as kidney damage for more than three months with glomerulus filtration rate less than 60ml / min / 1.73 m².
Objective: This study aims to explore the experience of life of patients with pre-dialysis chronic kidney disease used Roy’s adaptation model.
Methods: This study was a qualitative study using descriptive phenomenology approach in the General Hospital of Cibabat Cimahi West Java, Indonesia. Data were obtained with depth interviews involved eight participants with pre-dialysis chronic kidney disease consisting of two men and six women, aged ranged from 35 to 65 years. The years living with chronic kidney disease ranged from 1 to 2 years. Data were analyzed using Colaizzi’s methods.
Results: We found nine themes, namely: physical stimulus, psychic stimulus, socio-economic stimulus, physical coping mechanisms to control the situation, a coping mechanism to maintain health function, selecting behavioral adaptation physiology, selecting a behavior adaptation of the self-concept, selecting adaptation behaviors role function, and selecting behavioral adaptation interdependence.
Conclusion: It can be concluded that the experience of patients with pre-dialysis chronic kidney disease complained physical, psychological, social, economic, and spiritual problems. Therefore, health care professionals need to design an intervention to improve patients’ coping mechanism to maintain kidney function, and adapt to diet for foods and drinks, activity patterns and roles according to their conditions, which also elaborate the function of family support.

Keywords: chronic kidney disease; pre-dialysis; Roy’s adaptation model; qualitative study

INTRODUCTION

Along with the development of science, qualitative studies receive more attention, especially in the medical and nursing fields. This is because the results of qualitative research give more in-depth relevant phenomena. Usually the number of samples in this study a little in size but rich in detail the amount of data generated (Polit & Beck, 2004). Various qualitative studies have been conducted in patients with chronic kidney disease but few studies involved patients in pre dialysis stage. In stage of pre dialysis, patients need information related to the physical and psychological aspect that may changes in their life (Lewis, Stabler, & Welch, 2010). Patients in the pre dialysis were required different needs compared with patients under hemodialysis. Patients at this stage require more specific information that is
expected to improve the management of self-efficacy and reduce fear and anxiety.

Nursing concept model provides different views about nursing in regards with the characteristics of the model. Almost all nursing models applied in professional nursing practice shared the same concept, namely humans, environmental, health, and nursing. The conceptual model can be applied in the activities of nursing practice, research, teaching (Alligood, 2014). The Roy adaptation model describes the concept of nursing that requires nurses to focus on adaptation behavior in providing care to patients. Treatment and care for patients with chronic kidney disease require long-term follow-up. Various physical and psychological changes experienced by the patient require patients to demonstrate adaptation behavior to adjust living with the disease. Life experience is the paths of belonging (relationships), doing (meaningful engagement in activities), and understanding oneself and the world (King, 2004). Therefore, this study aim is to explore the live experience of patients with the chronic kidney disease pre dialysis, which focuses on the adaptation process.

METHODS

Study design
This study adopted the Phenomenology methodology to explore live experience in patients with chronic kidney disease pre-dialysis in Indonesia. Phenomenology is an approach that focuses on the meaning of real-life human experience (Polit & Beck, 2004). It is especially appropriate when a phenomenon is to be explored or conceptualized, or when a fresh look at a phenomenon is indicated (Polit & Beck, 2004). The phenomenological perspective used is Colaizzi (1978), who advocated a descriptive approach in order to understand a description of the meaning of an experience from the participant’s point of view (Colaizzi, 1978). Under the assumption that each person has understanding of the world is based on his or her own experiences, and therefore, one way to find out their experiences that they have received is by interviewing them. Colaizzi (1978) develop his methods under Giorgi supervision (Giorgi, 1970), this approach enquiry involved a process of validating the finding-the structure of phenomenon with participant. This process require participant the researcher returning the analysis of transcripts and the structure of the phenomenon to the respective participant for review (Saunders, Soomro, Buckingham, Jamtvedt, & Raina, 2003).

Participant
Patients diagnosed with chronic kidney disease pre-dialysis were recruited from outpatient and inpatient at one public hospital in West Java, Indonesia. The researchers were used purposive sampling method for selecting research participants and continue until data saturation. The inclusion criteria: 1) adults aged ranged from 20-65 years old, 2) have been diagnosed chronic kidney disease level III (GFR 15-29 ml/minutes) or IV (GFR 30-59 ml/minutes), 3) able to communicate in Bahasa Indonesia. Patients were excluded to participate if they had the condition known to affect cognitive function (neurologic deficit, mental disorder diagnosis, renal failure requiring hemodialysis).

Procedure
Approval of protection human subjects will be obtained from Institutional Review Board of the Faculty of Nursing, Universitas Indonesia (0342/UN2.F12.D/HKP.02.04/2015). The recruitment of patients was conducted by the investigator in outpatient or inpatient. The researcher arranged a suitable environment for the interview. Then, the researcher purposively selected participant and then the researcher introduced herself, provide the required information, explain the objectives of the study, and inform the participants that they could leave the study whenever they wanted to. In addition, the patients assured confidentiality of the information and anonymous. Finally, after obtaining their willingness to participate and they signed written consent forms, we scheduled for interview.
Data collection and ethical consideration
A face-to-face interview with each participant applied in a suitable room in hospital. The interviews began with as semi-structured interviews and continue using exploratory questions. Each interview lasted for 30–60 min. With the consent of the participants, the interviews recorded using an MP3 player (Creative model). At the end of each interview, the participants informed about the likelihood of another meeting to complete and clarify the interviews. Although the participants agreed to this, a second interview necessary in only one case. The following question will be used to guide the interview process. By posing open questions, the patients invite to describe in detail their ideas, attitudes, experiences, and behavior. The following question will use to guide the interview process: could you tell me about your lived since you diagnosed with chronic kidney disease? Tell me what has been impact of diseases on your personal life? How you cope with this disease?

Data analysis
Data analysis was performed using Colaizzi’s methods. There are seven steps to ensure the completion of the analysis. First, in order to acquire general feeling for experience, their statement will be read and reread (step 1). Then, the important step is extracting significant statement to generate information pertaining directly to phenomenon studies (step 2) and formulating meaning will be written in scientific language to illuminate various context of phenomenon (Step 3). Next step is categorizing into cluster of themes and validating with original text (step 4). After that, the finding will be integrated into comprehensive description of the desired phenomenon (step 5), and this description will be return to participant to validate finding (step 6). The last step is incorporating any changes based on the informants’ feedback (step 7).

Rigors
In this study, for validity and reliability data, Gaba and Lincoln criteria was used. Believability of the study ensured through the researcher’s long-term engagement in collecting and analyzing the data, and use of the revisions and reviews that conducted by the research associates and participants. To achieve data reliability, after being heard, implemented, and analyzed, the interviews were peer-reviewed. In addition, auditing used to achieve data neutrality and objectivity. Furthermore, given the previous experiences of the researcher in clinic, we tried not to let our views and beliefs affect the study's implementation process, tried to avoid prejudices, and do not study any similar research until the end of the analysis process. In order to achieve reliability of findings, after the hearing, implementation, and analysis of the interviews, another person, who had mastered the qualitative studies, but not involve in the study's process, were asked to help in the evaluation process. Thus, one or two of the recorded interviews together with the written form of the interviews assign to evaluate. To provide the transferability of the study, the research fully explained and the context and stages of the study fully described to the subjects by the researcher.

RESULTS
Data saturation was reached after interviewing 8 participants, including six women and two men. The ages of participants ranged from 35 to 65 years. Participants had diagnosed with chronic kidney disease ranged from one to two years. Participants were identified pseudonymously in the reports of findings. The following themes emerged from the data analysis derived from Roy’s theoretical model on stress adaptation: (a) physical stimulus, (b) psychological stimulus, (c) social and economic stimulus, (d) coping mechanism related to psychological problems, (e) coping mechanism related to maintain optimal health, (f) chosen the physiological adapted behaviors, (g) chosen adapted behaviors related self-concept, (h) chosen the adapted behaviors related to role function, (i) chosen the interdependency adapted behaviors. Figure 1 shows theme of adapted behaviors of
Physical stimulus
In this study, we found that physical simulations were more focus on physical symptoms resulted from the disease. Sub-themes included patent of respiratory change such as breathless at rest or during activity, nausea and vomiting, loss appetite, and body weight loss. Fatigue and activity intolerance were major sub-themes in activity. Moreover, fluid unbalance also commonly reported by patients, as followed:

P3 said, “Feeling fatigue..., uncomfortable..., and cannot control breathless ...” P8 said, “...tired..., if walking too far I feel tired..., breathless if walking too far..., just go to toilet make me tired..., if in sever condition..., someone help me to hold...” P2 said, “...since being hospitalized..., I feel nausea..., vomiting..., just looking the rice but feel want to vomit..., only smell something but feel nausea...” P4 talked, “...If I eat..., I feel nausea..., loss appetite...” P7 said “...down..., tired..., dizziness..., if going to somewhere just try to avoid that feeling...” P8 said, “...walking is disturbed..., tired..., cannot work...” P1 said “...my feet is swollen... yesterday bigger than now...” P5 said, “...if I drink a lot..., my feet will become bigger....”

According to our interview, participants reported that physical symptoms is disturb their daily activities. The nutrition problems also may have negative impact on body image due to loss of body weight. Moreover, in our study also found decrease of nutrition intake has potential effect on Protein Energy Wasting (PEW) in patients with chronic kidney disease, which commonly reported and disturbed the metabolism process.

Psychological stimulus
The second theme that identified in this study is psychological simulation. One important sub-theme has been identified in this study, which is psychological distress and emotional. From those sub-themes, we found three categories including anxiety, fear, and hopeless. Majority of participant describes that the sources of stress are come from the physiological situation such as kidney function and or laboratory results. Almost the psychological distress affects their sleep as described in interview.

P3 said, “.........I feel anxiety often because my creatinine and urea not decrease yet and I feel confuse what should I do...” P8 said, “.........I feel anxiety very severe, affects to my sleep........confuse what to do for the next......” P5 said, “.........Doctor said my kidney function is decreased....I feel worries for hemodialysis......”.

Social economic stimulus
The third theme identified in this study is the social and economic stimulus in patients with chronic kidney disease pre dialysis. Social and economic problems consist of four sub-themes including the issue of the family, could not attend social activities, sexual problems, financial problems as expressed by the following participants:

P3 said, “... All the work done in-law ...” P6 said, “... Already a month does not have sexual intercourse ...” P4 said, “I am skillful in helping women for delivery a baby ..., also have skill on take care a died body ... so I don’t need to feel worry ... before all the activity well done ..., but now already decreases...”

Based on the interview, most of participants had good role function both at work and in the family of environmental.

Physical coping mechanism to control situations
The fourth theme is about coping mechanism to control the situation. We identified three sub-themes, namely positive thinking, accept disease, and increased spiritual activity as expressed by the participants in the following:

P1 said, “... leisure time with grandson ..., watching television ....join in religious activities..., become feel calm ...”... My relationship with son and neighbors is good ..., we care each other ...” P2 said, “... Do not complain ... but I have to struggle ..., every day praying ..., must be strong to handle pain/discomfort ... stay strong ...” P7 said, “... From yesterday ... positive mind ... If it’s time to die ... I will accept ..., if think about died it just make tired ...”

Eight participants noted that most participants have a positive point of view regarding the condition of the pain.
Coping mechanism to manage the disease
The fifth theme is the coping mechanisms of patients which more focus on maintain health condition. We identified sub-themes including regular treatment, described in two categories: routine check-up and adherence to medication, as described by the following participants:

P1 said, "... I go to Salamun hospital for regular check-up ..., 2 times a week ...." P6 said, "...... Take medication regularly as the doctor's advice ...... follow the recommendation for diet.... pay a lot of attention to reduce urea and creatinine...." P6 also said, "I am sometimes confused... My sister told my disease cannot be cured........"

Selecting physiological adaptation
The sixth is related to the behaviors that participant choose as form of physiological adaptations in patients with chronic kidney disease pre dialysis. Sub-themes were identified refers to behavioral adaptations to fulfillment basic needs, which is described in four categories: diet, food restricted, drinking patterns, and drinking restricted as described by participants in the following:

![Figure 1 Adaptive behaviors of patients with pre-dialysis chronic kidney disease](image)

*Developed by authors*
Based on interviews, almost all participants restrict the intake of nutrients and fluids as one of management to manage the disease become severe. Seven of the eight participants limit their intake of protein either fish or beef. Four of the eight participants limit their intake of vegetables, especially green vegetables such as spinach.

**Self-concept-adapted behaviors**

Seventh themes are referring to behavior’s adaptation of self-concept. From this theme, we identified two sub-themes, namely the positive values to one’s self and future hope as described follows:

P1 said, "... I am not ashamed..., this is from God, not self-conscious ... no being a problem ..., later my disease will be recovered ..., I accept this really ..." P2 said, "If I am still strong ... I will continue to work ..." P3 said, "... want to worship the God more, prayer ..., chanting ...Dzikir..."

Having positive value toward one self, never be ashamed because of disease, and keep hope for better future life even though suffer from chronic kidney disease is important key sub-theme of adapted behaviors.

**Role function-adapted behaviors**

The eighth themes are behavioral adaptation related to role function after diagnosed with chronic kidney disease pre dialysis. We identified sub-theme as doing appropriate activities, which is depend on health condition. We found two categories to describe this sub-theme, namely doing the housework and work as usual.

P4 said, "... as a wife ..., as midwife assistant ...., as a mother ... as grandmother to granddaughter ..., nothing has changed ..." P2 said, "... I still work every day ..., every day ride public transportation ..., in the workplace is nothing change ..."

Participants in this study also choose behavioral adaptations-role functions, the participants tried to perform their role in accordance with the health conditions, if participants are in a good condition, then the participant will undertake appropriate activities of daily role. However, if the condition of the participants is unfit, the role of the participants will be replaced by other family members.

**DISCUSSION**

Majority of participants were complained physical and psychological problems such as respiratory pattern and anxiety. Weiss dan Weisshaar suggested that physical problems are one aspect that required more attention due to its significant impact on quality of life of patients with chronic kidney disease (Weiss & Weisshaar, 2014). Study also highlighted that management of chronic kidney disease is important aspect to prevent from any complication or make the disease getting severe (Daugirdas, Blake, & Ing, 2012). The changes in physical and psychological aspect may affect their social interaction and productivities. We thus proposed that health care professional need to design a management to minimalize the physical stimulus especially in pre-dialysis patients to maintain their health condition and prevent from complication. In regards to anxiety, almost participants in our study described that the anxiety affects their sleep quality. Another study empathized that patients with chronic kidney disease complained anxiety because they felt worried about their health status and scary about the complication. Psychological support and also health education related to chronic kidney disease and its management is needed to help patients adjust their current situation, as patients with chronic kidney disease in order to improve patients’ quality of life. Therefore, we need to develop a protocol for management of chronic kidney disease (Vilaplana, Zampieron, Craver, & Buja, 2009).

Some of participants have a positive value related to their lived and disease. This would be having a benefit to their health status. It
was concurrent with previous study stated that positive coping mechanism can minimalized psychological problems (Zawadzka & Byrcek, 2012). It has been well known that chronic kidney disease required long-term follow up for the treatment in all stage. We also found that the participants were routinely come to clinic or hospital for their physical examination. Study suggested that screening, diagnostic examination, and staging in patients with chronic kidney disease is needed as reference to decide an appropriate treatment (Daugirdas et al., 2012). Moreover, patients also described that since they diagnosis with chronic kidney disease, they began to manage their diet including food and drink. They restrict some of food that suggested from health care professional. Therefore, adaptation behavior is required and health care professional need to facilitate patients to the changes due to disease. Assessment to the daily nutrition intake such as patient recall of food intake may be a viable solution to help patients (Daugirdas et al., 2012). However, it requires comprehensive health education from professional to help patients recognized some of important behavior changed.

The way of participants chooses the change of self-concept is done by assessed their positive judgment towards their self, and never be ashamed as a patient who suffer from chronic kidney disease. Having a positive assessment of own self is very important, it can a big motivation to live in normal or usual condition and it can be a reason to keep hope for the future. Participants in this study also choose behavioral adaptations role functions, the participants tried to perform their role in accordance with the conditions, if participants are in a comfortable condition, then the participant will undertake appropriate daily activities. However, if the condition of the participants is uncomfortable, the role of the participants will be replaced by other family members. Social support is positively associated with a good treatment outcomes in various contexts of disease (Pichon, Rossi, Ogg, Krull, & Griffin, 2015). Social support can be given to patients, particularly from close relative. The family is a collection of two or more people who have ties or marriage and blood relations who live together under one roof with their respective roles and have a social attachment (Friedman, Bowden, & Jones, 2003). One of the functions of the family is demanding maintenance health status of their members and provides care to a family member who suffered from health problems. Family support is an important factor affecting the ability of participants' activities and carrying out its role, both activities in the home and activities outside. With the family support, participants felt appreciated and acknowledged, are not regarded as weak and useless, it is very important as encouraging participants to make the necessary adaptations behavior, in order to maintain kidney function.

CONCLUSION

We tentatively concluded that the experience of patients with chronic kidney disease predialysis, they were suffering from such of physical, psychological, social, economic, spiritual problems. So, professional health care needs to help patients to cope with the disease and some of behavior changes such as foods diet, drink, and activity patterns which also elaborate the role or support from family. We also recommend developing a model adaptation based on Roy’s model in patients with chronic kidney as a reference management of patients with chronic kidney disease, especially in the pre dialysis period.

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

References
THE CORRELATION OF PARENTING STYLE WITH COGNITIVE DEVELOPMENT IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

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Abstract
Background: Child development is a very important phase, in which children learn various skills as future generations. One of the disorders that can impede child development process is Attention Deficit Hyperactivity Disorder (ADHD). Children with ADHD have problems with cognitive abilities, of which about 20-60% of them have learning disorders. The efforts to support cognitive development in children with ADHD is by approaching the child's environment through parenting style.

Objective: This study aimed to determine the correlation of parenting style with cognitive development in the children with ADHD in SLB Negeri 1 Denpasar, Bali, Indonesia.

Methods: This study used a correlational design with cross sectional approach. The sample size of 30 respondents were selected using a purposive sampling technique. Data were collected using parenting style questionnaire (PSQ) and average value of odd semester report of 2016/2017 academic year.

Results: It was found that most parents with democratic parenting style were 19 people (63.3%), authoritarian style were 7 people (23.3%), and permissive style were 4 people (13.3%). The result of the contingency coefficient test obtained p-value of 0.039 (p < 0.05) and correlation value of 0.501, which indicated that there was a high correlation between parenting style with cognitive development in children with ADHD.

Conclusion: It is suggested that parents of ADHD children should be able to provide good parenting style for their children, especially for the cognitive development.

Keywords: parenting style; cognitive development; ADHD; children

INTRODUCTION

Child development is a very important phase that children learn various skills in the future. Disorders that can inhibit the process of child development are behavioral disorders that generally occur in early childhood and school age, one of which is Attention Deficit Hyperactivity Disorder (ADHD) (Hidayati, 2009). ADHD is a condition that there is a sedentary pattern such as inattention accompanied by hyperactivity and impulsivity in a person (Hidayati, 2009). Three subtypes of children with ADHD are ADD/ Attention Deficit Disorder, hyperactive-impulsive type, and mixed type (Chrisna F., 2014).

Based on data from National Health Interview Survey (NHIS) in 2011-2013, the children having ADHD in the United States were 2.7% at 4-5 year age category, 9.5% at 6-11 year age category, 11.8% at the age of 12-17 years (Pastor, Reuben, Duran, & Hawkins, 2015). The prevalence of ADHD 2009 in Indonesia in school-aged children has increased to 26.2% (Saputro, 2009). The prevalence of...
ADHD children in Denpasar Bali is 108 children (Pratiwi, 2014). During 2012, the number of ADHD patients who visited the clinic in Sanglah Hospital as many as 63 people, and children at the Center for Children Therapy and Special Needs School Pradnyagama Denpasar reached 150 children (WIHARTONO & Sutarni, 2006).

Childhood problems with ADHD are mostly in their cognitive abilities and adaptive behaviors (Mahabbati A., 2013), approximately 20-60% of ADHD children have learning disorders (Mahabbati A., 2013). Based on literature, ADHD childhood relationships with learning disorders are very understandable when the child loses his concentration and attention, which make the child cannot absorb the material as a whole (Chrisna F., 2014). In hyperactive-impulsive students, moving trends, and uncontrollable behavior also impede the learning process (Rief, 2008).

The main problem in children with ADHD is cognitive development. Efforts to support and influence cognitive development in children with ADHD is to approach the environment of children through parental care (Salimar, Hastuti, & Latifah, 2011). Every parent has a different parenting style with each other. The development of the child toward positive or negative is the impact of the main environment of the parents. Every parent has a more dominant tendency in parenting style (Anisah, 2017).

Parenting styles consist of three types, including authoritarian, democratic, and permissive. Authoritarian parenting is a parenting style that requires the child to follow the parent's instructions. Democratic parenting is a parenting style that shows strict supervision of the child's behavior, but also responsiveness, more creative children, smooth communication, not low self-esteem, and a big heart. Permissive parenting is a parenting style that educates children freely (Teviana & Yusiana, 2012).

A previous study concluded that there was a correlation of parenting style with the children development (Fatimah, 2012). Similar with another study revealed that there was a correlation of parenting style with the personal social development of toddlers. Democratic parenting style in this study refers to the educational capacity of children supported by the level of parental education, and personal social development at the age of toddler tends to be abnormal because it is caused by parenting style that do not support to explore the ability of their child (Nurhidayati, 2013).

The results of a preliminary study conducted at SLB Negeri 1 Denpasar on February 7, 2017 obtained children with mixed type (ADHD) as many as 18 children and Attention Deficit Disorder (ADD) as many as 20 children. Six people (15.8%) aged 7-11 years, and 32 people (84.2%) aged 11-22 years.

The results of interviews with teachers found that the children with ADHD mostly had learning difficulties because children often did not concentrate in the classroom, and they had unstable emotions and hyperactive which mad them could not follow the lessons optimally. Based on the results of interviews with ten parents of children with ADHD, six parents did the type of democratic parenting that parents always encouraged and supported what children did with consideration, three parents did the authoritarian parenting style that parents always limited their children in doing anything, and one parent had a permissive parenting style, which parents always free their children to do anything without telling them whether it is right or wrong. Based on the above phenomenon, this study aimed to examine the correlation of parenting style with cognitive development in children with ADHD.

METHODS

Study design
This study used a correlational cross-sectional research design. This study emphasizes the measurement or observation time of independent and dependent variable data only once at a time. Both variables are assessed simultaneously at a time, with no follow-up (Nursalam, 2013).
Setting
This study was conducted on 18 to 29 April 2017 at SLB Negeri 1 Denpasar, Bali, Indonesia.

Sample
The population of children with ADHD in SLB Negeri 1 Denpasar was 38 children. Sample size in this study was 30 people. Selected using a purposive sampling method. Purposive sampling was used to determine samples with certain considerations made by the researchers themselves, based on the characteristics or nature of the population that has been known previously (Sugiyono, 2008). Inclusion of the sample were children diagnosed with ADD / ADHD, aged ≥ 11 years with formal operational stage cognitive development, parents of children and children were willing to be respondents by signing informed consent. The exclusion criteria were children with physical disabilities, and parents of children could not read and write.

Instruments
Parenting Style Questionnaire (PSQ) was used to measure parenting style (Robinson, Mandleco, Olsen, & Hart, 2001). The questionnaire had been tested validated with the validity of the authoritarian of 0.81, the democratic of 0.83, and the permissive of 0.65. The reliability of the questionnaire was 0.76 (Önder & Gülay, 2009). To measure the cognitive development, the documentation of the average value of the odd semester report of the academic year 2016/2017 was used.

Ethical consideration
The study permission was obtained from STIKes Wira Medika PPNI Bali and SLB Negeri 1 Denpasar, Indonesia. We confirmed that each respondent in this study has signed an appropriate informed consent.

Data analysis
Data were analyzed using univariate analysis to present the mean, and contingency coefficient test with 95% confidence level (α = 0.05) to see the correlation between variables.

RESULTS
Condition of research location
SLB Negeri 1 Denpasar is located at Jl. Serma Gede No. 11 Sanglah Denpasar, Dauh Puri Kelod, West Denpasar District, Bali Province, Indonesia established on October 16, 1957. SLB Negeri 1 Denpasar uses one-unit system, with three levels of education system, ranged from Primary School Extraordinary (SDLB), Junior High School Extraordinary (SMLB) and Senior High School Extraordinary (SMALB).

SLB Negeri 1 Denpasar is led by a principal named Drs. Ngakan Made Dirgayusa, M.Pd and has a number of teachers as many as 25 people. SLB Negeri 1 Denpasar, from the beginning of its foundation (1957), only accepts children with visual impairment, but starting from the year 2007/2008 they receive various types and levels of other children with special needs such as children with autism, ADHD, ADD, hyperactive, slow learning, learning disabilities, emotional disturbance, concentration disorders, cerebral palsy and others. The number of students from SDLB to SMALB was 84 people. This school has daily activities that take place at school. The process of teaching and learning consists of 2 parts: the morning part for students with visual impairment and the afternoon part for children with special needs. Students are required to collect homework in the teachers’ guidance room before the class begins. The provided extracurricular services refer to the personal development needs of the students.

Characteristics of sample
Characteristics of ADHD children
Of thirty respondents with ADHD children in SLB Negeri 1 Denpasar as shown in the table 1, 26 people (86.7%) were males. The majority of the children aged 11-12 years.

Characteristics of parents
Table 2 shows that most of parents had senior high school (63.3%) as their educational background, and working as private workers (33.3%). Of thirty parents with ADHD children, 21 people (70%) had two children.


Table 1 Characteristics of respondents by gender and age of ADHD Children

<table>
<thead>
<tr>
<th>Characteristics of ADHD children</th>
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<tbody>
<tr>
<td>Gender</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>26</td>
<td>86.7</td>
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<tr>
<td>Female</td>
<td>4</td>
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<tr>
<td>Age (years)</td>
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<td>%</td>
</tr>
<tr>
<td>11</td>
<td>5</td>
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<tr>
<td>12</td>
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<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Table 2 Characteristics of respondents based on educational background, occupation, and number of children

<table>
<thead>
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<th>Characteristics of parents</th>
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</thead>
<tbody>
<tr>
<td>Education</td>
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<td>%</td>
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<tr>
<td>SD (Elementary school)</td>
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<td>-</td>
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<tr>
<td>SMP (Junior high school)</td>
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<td>6.7</td>
</tr>
<tr>
<td>SMA (Senior high school)</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td>D3 (Diploma 3)</td>
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<td>20</td>
</tr>
<tr>
<td>S1 (Bachelor degree)</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Occupation</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>PNS (Government employee)</td>
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<tr>
<td>Private Worker</td>
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</tr>
<tr>
<td>Entrepreneur</td>
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</tr>
<tr>
<td>Housewife</td>
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<tr>
<td>Number of Children</td>
<td>f</td>
<td>%</td>
</tr>
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<td>&lt;2</td>
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<td>-</td>
</tr>
<tr>
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<tr>
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<td>9</td>
<td>30</td>
</tr>
</tbody>
</table>

Parenting style and cognitive development in children with ADHD

Parenting style

Parenting style of parents in this study was divided into three types, namely: authoritarian, democratic, and permissive. Table 3 shows that majority of parents had democratic parenting style (63.3%), followed by authoritarian style (23.3%) and permissive style (13.3%).

Table 3 Parenting style of ADHD children in SLB Negeri 1 Denpasar

<table>
<thead>
<tr>
<th>Parenting style</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritarian</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Democratic</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td>Permissive</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Cognitive development in children with ADHD

Of thirty respondents of ADHD children as shown in the table 4, the average value of the odd semester report of the academic year 2016/2017 with B +, B, and B- value was equal, with 10 people (33.3%) in each value. The correlation of parenting style with cognitive development in children ADHD at SLB Negeri 1 Denpasar as shown in the Table 5 was analyzed by contingency coefficient test with 95% confidence level (α = 0.05), and
the result showed p-value = 0.039 (p <0.05), which indicated that there was a correlation between parenting style with cognitive development in children with ADHD. The magnitude of the correlation of the contingency coefficient test result was 0.501, which there was a high correlation between the two variables.

Table 4 The average value of the odd semester report of the academic year 2016/2017

<table>
<thead>
<tr>
<th>Average Value</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>B+</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>B-</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 5 Cross-tabulation distribution of parenting style and the average value of the odd semester report of the academic year 2016/2017 at SLB Negeri 1 Denpasar

<table>
<thead>
<tr>
<th>Parenting Style</th>
<th>Average Student Report Score</th>
<th>Amount</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B+</td>
<td>B</td>
<td>B-</td>
</tr>
<tr>
<td>Authoritarian</td>
<td>2</td>
<td>6.7</td>
<td>0</td>
</tr>
<tr>
<td>Democratic</td>
<td>8</td>
<td>26.7</td>
<td>8</td>
</tr>
<tr>
<td>Permissive</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Amount</strong></td>
<td>10</td>
<td>33.3</td>
<td>10</td>
</tr>
</tbody>
</table>

DISCUSSION

Factors influencing the parenting style in this study include socioeconomics, educational background, and number of children. The results showed that most parents applied democratic parenting style, as considered having more time with their children (the housewife), and most parents with permissive parenting style were parents who worked as private workers. Parents with high school educational background tend to adopt democratic parenting, and parents under senior high school background tend to have authoritarian and permissive parenting style. The majority of parents had 2 children and tended to apply democratic parenting, and there were some parents who had more than 2 children apply authoritarian and permissive parenting style.

Based on the results of cross tabulation on 30 respondents with the results of contingency coefficient test results showed that the value of p = 0.039 (p <0.05), indicated that there was a correlation between parenting style with cognitive development in children with ADHD at SLB Negeri 1 Denpasar. The magnitude of the correlation of the contingency coefficient test results was 0.501, which there was a high correlation between the two variables.

Children who were being cared for by democratic parenting and good cognitive development could be seen from the average value of report, which tend to get B and B+ (26.7%). Democratic parenting style provided by parents can make the child's development in a better direction to make children able to make decisions well, and can do creativity in accordance with what they want, but still under the supervision of parents, confident and oriented to achievement. This is in line with the opinion of a previous study who said that the cognitive development of children would be good if parents apply the democratic parenting style. The more democratic of the parents, the better cognitive development of children will be (Septiawati, 2016).
The democratic parenting will produce good cognitive development, because parents in the process of parenting will be full of patience, always stimulate the cognitive development of children to be able to initiate and oriented to achievement, always encourage their children to be independent, and always provide supervision of their child (Astuti & Untari, 2016). ADHD children with the most democratic type of parenting had good cognitive development but there were three ADHD children with less optimal cognitive development.

ADHD children with the democratic parenting style got B-values was 3 people (10%). Less optimal cognitive development in children who were being cared by democratic parenting style could be caused by children who disagreed with parents during the upbringing process, so that children could not accept the advice and guidance provided by parents. We have the same opinion with previous study who said that the emotions of children who are less stable would cause disputes when parents are trying to guide children (Suteja, 2017).

Children who were cared by authoritarian parenting with cognitive development were seen from the average grades with B+ values amounted to 2 people (6.7%), but most children with B- values amounted to 5 people (16.7%). Cognitive development with authoritarian parenting style tends to be less than optimal; this was due to the actions of parents who more impose the will of their children. The style of parenting will form a child who is more obedient to the command so that children who are able to adjust to the type of parenting by the parents will excel in the class and get a good value. Children with authoritarian parenting will be largely cowardly, lacking initiative, and lack of curiosity, so their cognitive development was less than optimal.

Authoritarian parenting will cause children to be less initiative, afraid of doing wrong, being obedient, and not being responsible (AR, Madyaningrum, & Subekti). This parenting style is often a conflict between parents and their children, whereas children in this case are in need of good social relationships. In a family like this, the child will feel his interests and hobbies are not cared for and considered unimportant. When children want to seek the attention of their parents or establish themselves, then authoritarian figures will be met, sometimes sanctions will be obtained by children. The demands of parents who are too high will burden the child and cause despair, low self-esteem, which make the child is not motivated to excel. ADHD children with authoritarian parenting do not all have poor cognitive development, whereas in this study there were ADHD children with B+ values.

Two children of ADHD (6.7%) with the authoritarian parenting got B+ values because this type of parenting can form a child to be obedient and afraid of their parents to create disciplined, polite, diligent, and obedient children. Discipline behavior in children will lead children to diligently doing homework provided by the teacher, the child will be diligent study, and never ditch. Parents will punish the child if the child breaks the rules and does not follow orders. Authoritarian parenting with punishment will create a deterrent effect on children so that children behave according to what is desired by their parents (Rostiana, Wilodat, & Alya, 2015).

Children who were cared by permissive parenting style with cognitive development were seen from the average grades, where B and B values were 2 (6.7%), respectively. The cognitive development of children with permissive parenting style tends to be less than optimal because parents allow and release children in the learning process, thus forming children who are spoiled, lazy, unable to control themselves, and there is no motivation to perform. According to previous research, permissive parents will give their children an opportunity to do something unsupervised and provide little guidance to their children (Rostiana et al., 2015). Children with permissive parenting cannot control themselves and are not motivated to perform. Children will feel they do not have to go to school and excel because parents never force them to study. Children will be free to do anything like fighting in school, ditching, not listening to the teacher, not paying attention to the lessons learned at school, and not doing homework. Attention to parents of children is
very little so that cognitive development in children with permissive parenting style was not optimal.

Permissive parenting style does not always form a less optimal cognitive development, seen from two children (6.7%) with good cognitive development who have the value of B. Children who are able to offset parents with permissive type will be free to create in accordance with his desire so that the child will be creative. We agrees with a study who said that if the child is able to manage all his thoughts, attitudes and actions well, the possibilities of freedom given by parents could be used to develop his creativity and talents, so he becomes an adult individual, initiative, and creative (Suteja, 2017).

We argue that parenting is the main environment in everyday life of children and an important factor in the process of growth and development of children. Democratic parenting is the best parenting style in shaping the development of the child towards a positive direction, especially in improving the child's cognitive development. The more democratic parenting style, the optimal cognitive development of children with ADHD will be.

CONCLUSION

There was a high correlation between parenting style with cognitive development in children with ADHD (Attention Deficit Hyperactivity Disorder), therefore this study can be used as health education to society, child nurse, and health field to increase efforts in reducing the risk of delaying cognitive development in ADHD children, as well as it can be used as basic data to increase knowledge to carry out further research related to the correlation of parenting style to other developments such as language, social, and motoric development in children with ADHD (Attention Deficit Hyperactivity Disorder).

Declaration of Conflicting Interest
None declared.

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Author Contribution
All authors contributed equally in this study.

References


