

THE EFFECTS OF GUIDED IMAGERY ON DYSMENORRHOEA INTENSITY AND HEMOGLOBIN LEVELS

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Abstract

Menstruation is defined as the periodic efflux of the sloughed endometrium and blood out of the uterine cavity into the vagina and ultimately outside of a woman's body. Irregular menstrual cycle length or number of days of menses may affect the levels of hemoglobin (Hb). Menstrual pain is pain during menstruation is felt in the lower abdomen and appear before, during or after menstruation. Guided Imagery is a relaxation technique guiding some one to focus in pleasant images to reduce pain. The aim of this study is to analyze whether the guided imagery is an effective technique for reduce dysmenorrhoea and maintain hemoglobin levels during menstrual cycle. This research is a quasy-experimental research with pre-test and post-test control group. Data were analyzed using Mann_Whitney test, and the p-value of <0.05 was considered statistically significant. A total of 32 adolescents were studied (16 in treatment group, 16 in control group). After guided imagery, dysmenorrhoea reduced significantly in the treatment group (4.8 ± 0.8 to 2.6 ± 0.5 , $p=0.001$) and there was no change in control group (4.6 ± 0.6). There was significant difference between the two groups ($p=0.001$). Decrease in hemoglobin levels were lower in treatment group (10.9 ± 0.5 gr% to 10.8 ± 0.4 gr%) compared to the control group (11 ± 0.6 gr% to 10.6 ± 0.5). However there was no significant difference between the two groups. This study concluded that guided imagery effective in reduce dysmenorrhoea and maintain hemoglobin levels.

Keywords: *Guided Imagery, Dysmenorrhoea Intensity, Hemoglobin Level*

INTRODUCTION

Menstruation is defined as the periodic efflux of the sloughed endometrium and blood out of the uterine cavity into the vagina and ultimately outside of a woman's body. Irregular menstrual cycle length or number of days of menses may affect the levels of hemoglobin. Hemoglobin is the part of blood that contains iron, carries oxygen through the body, and gives blood its red color. Hemoglobin in unpregnancy female is present normally in blood to the extent of 11 to 12 grams in 100 milliliters. Menstrual cycles often are irregular through adolescence, particularly the interval from the first to the second cycle (Johnston, 2014).

According to the World Health Organization's international and multicenter study of 3,073 girls, the median length of the first cycle after menarche was 34 days, with 38% of cycle lengths exceeding 40 days. Variability was wide: 10% of females had more than 60 days between their first and second menses, and 7% had a first-cycle length of 20 days. Most females bleeds for 2-7 days during their first menses (17-19 year). Normal menstrual cycle interval in young

female typically 21 – 45 days. Menstrual flow length 2 – 7 days (ACOG, 2006).

During menstruation, the muscles of the uterus contract in response to hormone-like substances called prostaglandins, produced by the lining of the uterus. The levels of the prostaglandins increase prior to menstruation, and peak at the start of the menses. The levels decline again as a woman menstruates, resulting in less uterine discomfort or cramps after the first few days of the menstrual period (Johnston, 2014). The level of Prostaglandin in female with dysmenorrhoea is ten times higher compare to female without dysmenorrhoea (ACOG, 2006).

Most women experience some pain or discomfort during the menses. However, some experience dysmenorrhoea (painful periods) or "difficult menstrual flow", which may present as moderate to severe cramps or pain in the lower abdomen or lower back, diarrhoea or constipation, heavy menstrual flow, frequent urination, nausea, vomiting, headache or dizziness. Primary dysmenorrhoea refers to recurrent, crampy lower abdominal pain that occurs during menstruation in the absence of other underlying conditions / disease (Johnston, 2014).

Dysmenorrhoea is also more prevalent in women who suffer from premenstrual syndrome (PMS) (Poornima, 2015).

Several studies among American and Australian adolescents, have shown that adolescents with dysmenorrhea report that it affects their academic performance and social and sports activities, a distressing finding given the availability of effective medications (Eman, 2012).

In Polytechnic of Medan Health Ministry, Midwifery Campus at Padangsidimpuan, estimated 35% student with dysmenorrhoea and about 5% can not do usual activities due to menstrual pain.

Relaxation is more than a state of mind; it physically changes the way your body functions. When your body is relaxed breathing slows, blood pressure decrease and increase oxygen consumption, and some people report an increased sense of well-being. This is called the "relaxation response." Being able to produce the relaxation response using relaxation techniques may counteract the effects of long-term stress, which may contribute to or worsen a range of health problems including depression, digestive disorders, headaches, high blood pressure, and insomnia (ACOG, 2006).

Relaxation is an independent intervention to reduce pain intensity, improve pulmonary ventilation and increases blood oxygenation. Skeletal muscle relaxation is believed to reduce pain by relaxing the muscles, there are many evidence that show the effectiveness of relaxation in relieving pain. (Smeltzer, 2002).

Relaxation in general as the most effective method, especially in patients who experience pain. Guided imagery is one of relaxation technique, that focus on pleasant images, through storytelling or descriptions designed to suggest mental images (also called visualization) to replace negative or stressful feelings and relax (NCCAM, 2013).

So the aim of this study is to analyze the effects of guided imagery to reduce dysmenorrhoea and maintain hemoglobin levels.

METHODS

1. Statement of the problem

To analyze the effects of guided imagery to reduce dysmenorrhoea and maintain hemoglobin levels.

2. Operational Definition

Dysmenorrhoea. Dysmenorrhoea can be defined as recurrent, crampy lower abdominal pain that occurs during menstruation in the absence of other underlying conditions/disease.

Guided imagery. Guided imagery can be defined as relaxation technique, that focus on pleasant images to replace negative or stressful feelings and relax.

Hemoglobin Levels: Hemoglobin levels can be defined as the levels of hemoglobin in blood.

3. Hypothesis

- a. There is significant difference of menstrual pain (Dysmenorrhoea) between intervention and control group after guided magery
- b. There is significant difference of hemoglobin levels between intervention and control group after guided magery

4. Research design

A quantitative paradigm was used in the study. A quasi-experimental design which involves both pre-test post-test control group design, an experimental group was used to study the effect of the intervention on dysmenorrhoea and hemoglobin levels and no intervention in control group.

5. Sample

The sample chosen for the study was 32 female college students in the age group of 18 to 22 years with dysmenorrhoea. Sample size by Sastroasmoro formula with the value of SD from previous study is 1,17. 16 participants were assigned to the intervention group and 16 to the control group. The sample was chosen based on convenience sampling by approaching college students from Padangsidimpuan midwifery academy that showed dysmenorrhoea based on observation form.

6. Tool used

NRS (Numerical Rating Scale) : The Numerical Rating Scale Form by Potter and Perry (2005) was used to see the intensity dysmenorrhoea of Participants.

7. Procedure

College students of Padangsidimpuan midwifery academy were approached by the researcher for participation in the study through interview. Female students were asked whether they experienced dysmenorrhoea in relation to their menstrual cycle. These students were given NRS (Numerical Rating

Scale) to identified their pain intensity. The participants were enrolled for the study based on their pain intensity of menses. 32 participants with moderate and severe pain of Dysmenorrhoea were be selected and 16 participants were assigned to the intervention group and 16 to the control group respectively. Participants whose menstrual phase fell around the same time of the month were included so that the intervention can be given accordingly. Informed consent was be obtained from the participants. The researcher gave the participants the guide to do guided imagery and teach them until they can do it by themselves. The intervention consisted of the participants doing guided magery 15 minutes a day by 7.30 o'clock in the morning. The intervention began on the first day of dysmenorrhoea and ended on the last day of the menstrual cycle. The participants recorded their pain intensity form by the first day of dysmenorrhoea and the last day of menses. The control group was not given any intervention. However they completed the NRS form, from the first day of dysmenorrhoea and the last day of menstrual cycle.

DATA ANALYSIS

Mann_Whitney-test was used to compare the intervention group and control group data.

RESULTS AND DISCUSSION

Results

Table 1 showing the characteristic of the intervention group and control group

Character istic	Interventio n Group Mean±SD	Control Group Mean± SD	Sig
Age	18,7 ± 1,0	18,7 ± 0,5	<i>p>0,05</i>
Age of Menarche	13,0 ± 1,1	13,5 ± 1,2	<i>p>0,05</i>
Pain intensity	4,8 ± 0,8	4,6 ± 0,6	<i>p>0,05</i>
Hemoglob in levels	10,9 ± 0,5	11 ± 0,6	<i>p>0,05</i>

There is no significant difference of characteristics between the the intervention group and control group.

Table 2 showing the results of mann_whitney test of post-test total score of guided imagery between intervention group and control group on intensity of dysmenorrhoea

Dysmenorrhoea Intensity	Mean ± SD	<i>p</i>
Intervention Group	2.6 ± 0.5	0.001
Control Group	4.6 ± 0.6	

There is a significant difference between the intervention group (M=2.6 ± 0.5) and control group (M= 4.6 ± 0.6) on the post-test of guided imagery on the dysmenorrhoea intensity; *p* = 0.001.

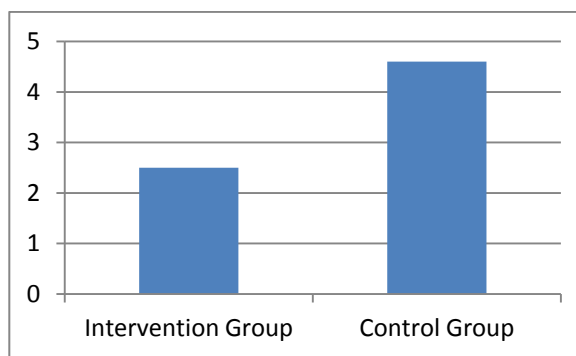


figure 1. Mean of dysmenorrhoea intensity post test between intervention group and control group.

Table 3 showing the results of mann_whitney test of post-test total score of guided imagery between intervention group and control group on hemoglobin levels

Hemoglobin levels	Mean ± SD	Sig
Intervention Group	10,8 ± 0,4	0,2
Control Group	10,6 ± 0,5	

There is no significant difference between the intervention group (M=10,8 ± 0,4) and control group (M= 10,6 ± 0,5) on the post-test of guided imagery on the hemoglobin levels; *p* = 0.2.

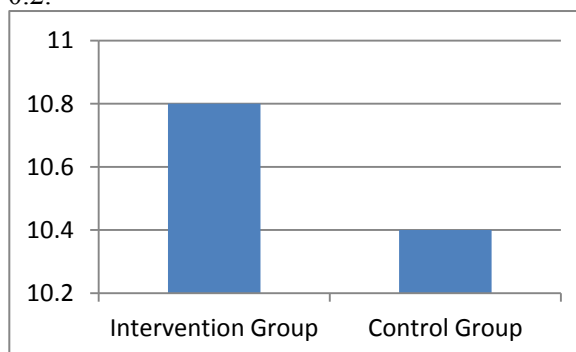


figure 2. Mean of hemoglobin levels post test between intervention group and control group.

DISCUSSION

The purpose of the present research was to study the effectiveness of guided imagery on the intensity of dysmenorrhoea and hemoglobin levels.

The results of the study indicate that guided imagery has had a significant effect on the intervention group, leading to a reduction in the intensity of dysmenorrhoea.

Lower reduction of hemoglobin levels compared to control group, however there is no significant difference between the two groups.

Table 1 and 2 shows that the pre-test scores of the participants in the intervention group on dysmenorrhoea intensity is higher than the post-test scores, indicating a reduction in the dysmenorrhoea intensity after the intervention. The post-test scores between the intervention group is lower compared to the control group and with the Mann-Whitney test, statistically significant. Based on this, the hypothesis which states that there is significant difference in the dysmenorrhoea intensity of the participants in the intervention group compared to control group is accepted.

Hence, based on these results, a conclusion can be drawn that guided imagery has a significant effect on the reduction of dysmenorrhoea intensity.

Previous studies showed that guided imagery have an effect on the reduction severe dysmenorrhoea on three participants to mild dysmenorrhoea (Novarenta, 2013).

Relaxation can control the pain by minimizing sympathetic activity in the autonomic nervous system. Adolescence can increase the activity of the parasympathetic nervous vegetative components, simultaneously. The technique can reduce the sensation of pain and control the intensity of adolescent reaction to the pain. Hormones adrenaline and cortisol that causes stress will decrease, adolescence can improve concentration and feel at ease making it easier to regulate breathing through respiratory frequency of less than 60-70 x / min. PaCO₂ levels will increase and decrease the PH so that it will increase oxygen levels in the blood (Potter and Perry, 2005)

In the relaxed condition, the body will stop the production of adrenaline hormones and all hormones that is required when stress

occurred. Because of the sex hormones (estrogen and progesterone) and the stress hormone (adrenaline) are produced from the same chemical building blocks, when we reduce stress then will reduce the production of the sex hormone. Thus, the need for relaxation to provide an opportunity for the body to produce hormones that are important to get menstrual pain free (Sigit, 2010)

The main principle of pain relief by relaxation lies in the physiology of the autonomic nervous system, which is part of the peripheral nervous system that maintains homeostatic internal environment of individual. At the time of the release of mediators such as bradikinin and prostaglandin, would stimulate the sympathetic nerve, causing vasoconstriction which ultimately increases muscle tone that cause various effects such as muscle spasms that eventually suppress the blood vessels, reducing blood flow and increasing the speed of muscle metabolism that causes impulse transmission pain from the spinal cord to the brain will be perceived as painful (Tamsuri, 2007).

Table 1 and 3 shows that the reduction of hemoglobin levels is lower in the intervention group compared to control group, indicating a maintaining of the hemoglobin levels after menstruation. However there is no significant difference on the hemoglobin levels between the two groups. The hypothesis which states that there is significant difference in the hemoglobin levels of the participants in the intervention group compared to control group is rejected.

Hence, based on these results, a conclusion can be drawn that guided imagery has a significant effect on the reduction of dysmenorrhoea intensity.

Menstrual cycle length or number of days of menses may affect the levels of hemoglobin. Short cycle and excessive menstrual flow automatically increase blood loss. In this study both of the intervention group and the control group have a normal menstrual cycle interval and menstrual flow length. According to Smith (2007), each a human took 20.96% oxygen with a tidal volume 350 ml, then in a second a human took the oxygen about 73.36 ml. By maximizing the development of lung, then obtained maximal inspiration volume until 3000 ml, and the hemoglobin will bind oxygen with estimates 1.34 ml oxygen x hemoglobin/gram percent,

when hemoglobin levels are 14 x 350 ml = 6566 gram of oxygen per second are carried by the blood throughout the body.

Hemoglobin is found in the red blood cells of the body. Each red blood cell (RBC) contains approximately 280 million hemoglobin molecules. The main function of hemoglobin is to transport oxygen from the lungs to the tissues and then transport CO₂ back from the tissues to the lungs. Therefore, guided imagery as one of relaxation technique is useful as distraction, so that the patient's mind shifted focus from pain and at the same time optimizing oxygen inhalation for the stress cells. With the increase in oxygen uptake so the hemoglobin levels to bind oxygen will also increase.

CONCLUSION

Thus the hypotheses which stated that there is significant difference between the intervention group and the control group on were accepted. However, the hypotheses which stated that there is significant difference between the ntervention group and control group on hemoglobin levels were rejected. Thus, it can be concluded from the results of the present study that guided imagery has a significant effect in reducing the menstrual pain (dysmenorrhoea) and an optional choice to maintain hemoglobin levels in menstrual cycle.

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