

THE EFFECTS OF YOGA PRACTICE ON THE LEVEL OF PERIOD PAIN AMONG FEMALE STUDENTS OF NURSING PROGRAM AT RESPATI UNIVERSITY, YOGYAKARTA

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Abstract

Female adolescents often suffer from *pain during periods* (dysmenorrhoea). The prevalence of dysmenorrhoea in Central Java was 56%. Even though such period pain is not dangerous, it might interfere with daily activities. A *non-pharmacological* therapy can be used to *overcome dysmenorrhoea* that is through yoga practice. A preliminary study found out that 24 of 30 female students suffered from period pain. The aim of this study was to find out the effects of Yoga practice on the level of period pain among female students of Nursing Program at Respati University, Yogyakarta. It was a quantitative research with a quasi-experimental design. A consecutive sampling was used to collect data from 20 respondents using the *numeric pain rating scale*. As for the analysis, it used the Wilcoxon test. The *numeric pain rating scale before and after yoga practice indicates a scale of 5.15 and 3.00. The bivariate test shows a p-value of 0.000.* There was an effect of Yoga practice on the level of period pain among female students of Nursing Program at Respati University, Yogyakarta.

Keywords : yoga practice, period pain, female students

1. INTRODUCTION

Youth is a maturation period of human reproduction organs and has been frequently referred to as the transition phase[1]. On the 2010's population census in Indonesia, the number of 10-19 years age group has reached 43.5 million and about 18% of the total population. For Indonesia itself, it is estimated that there are 1.2 million of teenagers or 18% of total world population[2]. Teenagers have a maturation period of human reproduction organs and mostly referred to as puberty[3]. One of the common problems faced by teenage girls is a pain during the menstruation which mostly referred to as dysmenorrhea. Dysmenorrhea is a painful period during menstruation caused by the cramp in uterine muscles. The impacts of dysmenorrhea on teenage girls include comforting disorder, decreasing activities, disrupted sleep pattern, disrupted appetite even no appetite, disrupted interpersonal relationship, difficulty in concentrating on work and study[4]. This study has also reported that dysmenorrhea caused 14% of teenagers to often absent from school. In Indonesia, the number of events of dysmenorrhea is amounted to 64.25% consisting of 54.89% of primary dysmenorrhea and 9.36% of secondary dysmenorrhea. The number of events in Central Java reached 56%, although, in general, dysmenorrhea is not harmful but can disrupt any activities. The degrees of pain experienced by teenage girls are different depending on individual responses toward pain[5].

The treatment or the management used to reduce menstrual pain is by giving pharmacological and non-pharmacological therapies. There are many available

Treatments, however, medicines are dangerous chemical compound for body if consumed continuously by human that could cause side effects. Due to lot of side effects of consuming pharmacological drugs, there is a way to minimize menstrual pain namely through non-pharmacological method which can be done by performing physical stimulations that include skin stimulation, electrical stimulation, acupuncture, cognitive behavioral therapies that include relaxation and hypnotism.⁵ Other non-pharmacological managements can be done through warm compress or warm-water bath, massage, physical training, enough sleep, and distractions including listening to music as well as relaxations such as yoga and deep breathing which could reduce dysmenorrhea. Yoga is one of the techniques that focuses on relaxation technique in which that relaxation technique is one of the methods to minimize pain and easy to be done in daily lives[6].

Yoga practice is one of the alternative therapies and becoming one of the option of the researcher because yoga only involves muscle and respiration systems, in addition, yoga is very easy to be practiced because it does not require specific tools, therefore, it can be done at anytime. Yoga is one of the alternative options of physical exercise which has lot of benefits, thus, people get more attracted to it. One of the main and actual benefits of yoga is the improvement of flexibility. Asana is one of the yoga's elements which associated with postures or movements that can flex muscles and binder tissues around bones or joints. This process releases lactic acid that usually causes inflexibility, tension, pain, and exhaustion, therefore, routine practice of yoga could prevent the occurrence of various complaints on that area[7].

Yoga could also reduce pains i.e., menstrual pain by accelerating the stimulation of body's defense system as well as shifting the pattern of pain tolerance pattern into a more relaxing phase. Yoga is one of the physical movements which could produce endoprine hormone during the physical exercise. This hormone can be functioned as natural sedative produced by brain that generates comfort to reduce pain during contraction. In addition, yoga is also relaxing in which the relaxation effect could enhance the response of parasympathetic nerve that causes vasodilation effect of uterine blood vessel, therefore, the uterine blood flow will improve and the uterine contraction will decrease. Aside from that, mechanoreceptor stimulus on abdominal skin provides relaxation effect to abdominal muscle and distraction, therefore, abdominal cramps that being experienced can decrease[8].

According to the result of the preliminary study conducted on December 5th 2017 toward nursing students in I-V semesters which amounted to 341 students, after the interview was performed to 30 students of I-V classes that taken randomly, data has been acquired in which 6 female students of A.12 to A.14 classes did not experience dysmenorrhea during their menstruation while 24 female students did experience dysmenorrhea, 4 of 24 students (0.96%) experienced mild pain, 14 of 24 female students (3.36%) experienced moderate pain, and 6 of 24 students (1.44%) experienced severe pain. To manage the pain, fourteen female students preferred to sleep, 6 female students preferred warm compress on stomach, 2 female students consumed medicine to reduce the pain, and 2 female students hold the pain by drinking water to minimize the dysmenorrhea. Of 30 students that have been interviewed, there were 2 female students who knew the way to handle menstrual pain by practicing yoga, however, they have not practiced yoga to minimize dysmenorrhea.

2. MATERIALS AND METHODS

This research was a quasi-experimental study with pre-test and post-test without control. This research was aimed to discover the impact of yoga practice on degrees of pain during menstruation on female nursing students of UNRIYO. This research was performed in A.401 room of campus 2 of Universitas Respati Yogyakarta in April 2018 with the sample amounted to 20 sample. Consecutive

sampling was used as the sample collection technique. The bivariate test in this research was using Wilcoxon test.

3. RESULTS AND DISCUSSIONS

3.1 Results

3.1.1 Characteristics of Respondents

a) Age

Table 1. Characteristics of Respondents Based on the Age of Female Students of Nursing Science Undergraduate Program in Universitas Respati Yogyakarta on April 2018 (n=20)

Me dia n	Standard of Deviation	Score (Min- Max)
20. 00	0.813	18-21

According to Table 1, it can be known that the median of the age of female students of Nursing Science Undergraduate Program is 20.00 with a minimum age range of 18 years and a maximum range of 21 years and 0.813 of standard of deviation.

b) Class

Table 2. Characteristics of Respondents Based on the Classes of Female Students of Nursing Science Undergraduate Program of Universitas Respati Yogyakarta on April 2018 (n=20)

Class	Frequency (f)	Percentage (%)
2015 (A12)	7	35.0
2016 (A13)	6	30.0
2017 (A14)	7	35.0
Total	20	100

According to Table 2, it can be known that most of the respondents are from the class of 2015 and the class of 2017 which amounted to 14 students (70%).

3.1.2 Pain Scale before Yoga Practice

Table 3. Average Pain Scale before the Intervention of Yoga Practice

Menstrual Pain	Median	Standard of Deviation	Min	Max
<i>Pre-test</i>	5,00	1,531	3	9

According to Table 3, it can be known that the median of menstruation pain scale of the respondents before the therapy of yoga practice is given is 5.00.

3.1.3 Pain Scale after Yoga Practice

Table 4. Mean of Pain Scale after the Intervention of Yoga Practice

Menstrual Pain	Mean	Standard of Deviation	Min	Max
<i>Post-test</i>	3.00	1.622	0	6

According to Table 4, it can be known that the mean of menstruation pain scale of the respondents after the provision of yoga practice therapy is 3.00.

3.1.4 The Impact of Yoga Practice on Degrees of Pain During Menstruation

Before the researcher was performing test toward the impact of yoga practice on degrees of pain of menstruation, the result of normality test was acquired as follows.

Table 5. Normality Test of Data

Pain Scale	<i>p-value</i>
Pre	0.039
Post	0.297

According to Table 5, the normality test of data was performed through Shapiro Wilk test because the number of respondents is <50 and the result of normality test on pre = 0.039 (<0.05), and on post = 0.297 (>0.05) can be determined as normal if both data have >0.05 p value. Because one of the data was not normal, thus, the hypothesis test used was Wilcoxon test.

Table 6. The Impact of Yoga Practice on Degrees of Pain During Menstruation of Female Nursing Students in Universitas Respati Yogyakarta

Menstrual Pain	Mean/Median	Difference of <i>P value</i>
<i>Pre test</i>	5.00	2.00 0.000
<i>Post test</i>	3.00	

According to Table 6, it is known that the median of degrees of pain before the yoga practice was provided is 5.00 while after the yoga practice was provided is 3.00. The result of statistical test by using Wilcoxon test was resulted in 0.000 of p-value which means that H_0 is rejected or H_a is accepted, therefore, it can be concluded that there is an impact of yoga practice on degrees of pain during menstruation of female nursing students in UNRIYO.

3.2 DISCUSSION

3.2.1 Characteristics of Respondents

According to Table 1 concerning the characteristics of respondents based on age, it has been acquired that the median of age of female students of Nursing Science Undergraduate Program is 20.00 years with a minimum age range of 18 years and a maximum age range of 21 years old. Teenagers are categorized into two namely early teenagers (12-16 years old) and late teenagers (17-25 years old) [9]. In this research, most of the respondent group age has already categorized as group age of late teenagers.

Another factor that could affect the menstrual pain is a long period of menstruation, obesity, stress, and alcohol consumption[10]. One of the factors that could affect menstrual pain is age, that generally dysmenorrhea occurred on the respondents in the age between 15-25 years because the optimization of uterine nerve function occurs at this age, therefore, there is increased prostaglandin secretion which resulted in the emergence of pain during menstruation that referred to as primary dysmenorrhea[10].

Primary dysmenorrhea has been experienced by 60-75 percent of young women. Three-quarter of women experienced mild or moderate intensity of cramp, 25% of the pain is severe and unmanageable. Primary dysmenorrhea is usually started 2-3 years after the menarche then reaches maximum state at the age of 15-25 years old, this condition occurs because the menstruation cycle on the first month after menarche is usually a non-painful anovulatory. The frequency of dysmenorrhea could decrease in older ages and usually disappear after giving birth[11].

2) Pain Scale before Yoga Practice

This research has indicated that 20 female students experienced moderate scale of dysmenorrhea before yoga is practiced. Based on the median result of dysmenorrhea pain scale, 5.00 score was acquired with 1.531 of standard of deviation. The pain scale of 5 (moderate) is the pain scale that could indicate the location of pain, able to follow the order properly[12].

This research showed different degrees of pain of the respondents. The disparity of pain is influenced by some factors such as age, sex, culture, social, and coping[13]. Severe pain can be caused by the increasing prostaglandin secretion that increase uterine contraction[14]. One of the underlying factors of primary dysmenorrhea is endocrine factor caused by excessive uterine contraction. This endocrine factor is associated with tonus and intestinal muscle contractility. The increasing amount of prostaglandin released into the blood circle in secretion phase that causes dysmenorrhea, in addition, other things that might occur are headache, nausea and vomiting[15]. This research is consistent with the study in which there were 40 female students who experience moderate

scale of menstrual pain before practicing yoga. With the mean result of dysmenorrhea pain scale, 5.10 score was acquired with 0.778 of standard of deviation[15].

According to Table 3 of median pain scale experienced by respondents namely 5.00 (media), which the degrees of dysmenorrhea of female nursing students in VII semester of STIKES Aisyiyah Yogyakarta before yoga therapy was performed were unmanageable dysmenorrhea experienced by 1 respondent, moderate dysmenorrhea experienced by 9 respondents, and mild dysmenorrhea experienced by 1 respondent. The daily activities of someone with dysmenorrhea will be disrupted. This condition is consistent on VII semester female nursing students of STIKES Aisyiyah Yogyakarta who experience severe degree of dysmenorrhea, this condition will disrupt the college and learning activities even in completing the thesis[15].

Another study that supports this research is the regarding the measurement of pain intensity of dysmenorrhea which resulted in 5.20 of mean of the decreasing pain intensity of dysmenorrhea before yoga was practiced. While the mean of the decreasing pain intensity of dysmenorrhea after yoga practice was 4.20. The result of Mann-Whitney test for the comparison of pain intensities between the experimental group after given with treatment and the control group with non-treatment has indicated 0.000 of p-value which $<\alpha$ (0,05), it means that yoga practice is effective in reducing the pain intensities of dysmenorrhea.

3) Pain Scale after Yoga Practice

According to Table 4 of pain scale, 3.00 of mean score was acquired after yoga practice has been implemented. The pain scale of 3.00 (mild) is the pain scale can be managed and still able to communicate properly¹⁰. Yoga is movements that include physical practice and relaxation technique. After yoga has been practiced for 15-20 minutes, 3.00 of mean pain scale was acquired with 1.622 of standard of deviation. This research is consistent with the research conducted by Purwanti (2013) which obtained 6.27 of mean score of dysmenorrhea pain before yoga was practiced and 3.47 of mean score after yoga was practiced. In entirety, respondents experienced decrease in dysmenorrhea pain scale after practicing yoga for 15-20 minutes, pain scales experienced between respondents were different and the decreasing pain scale toward zero pain is expected by performing yoga movements during the occurrence of dysmenorrhea and it is also expected that the pain score during menstruation could decrease as well. Practicing yoga for 10 minutes could change the tolerance pattern of pain into a more pleasuring phase by stimulating body to release endogenous opioid (the compound which functioned to inhibit pain) [16].

The results of this research are consistent which showed differences of decrease after yoga therapy was performed. The mean result of the degree of dysmenorrhea after yoga therapy was 3.13 which shows that the degree of dysmenorrhea experienced by VII semester female nursing

students of STIKES Aisiyiah Yogyakarta has changed into a mild category. The degree of dysmenorrhea after yoga therapy was better compared to the mean degree of dysmenorrhea before the yoga therapy which has decreased from severe to mild dysmenorrhea. This condition has proved that the yoga therapy conducted by VII Semester female nursing students of STIKES Aisiyiah Yogyakarta was beneficial to reduce the dysmenorrhea experienced by the female students. Practicing yoga regularly could provide benefits such as improving endocrine gland inside the body, improving blood circulation, flexing muscles, improving the capacity of lungs during the breathing, reducing body tension, and minimizing menstrual pain[15].

Another study that supports this research with analysis results showed 0.001 p value which $< \alpha$ (0,05), means that there was an effectivity provided by yoga in reducing the degree of dysmenorrhea of teenage girls in SMAN 1 Bergas of Semarang Regency. This condition occurred by considering that pain is a subjective matter and the amount of the felt pain could only be described by the individual who experience it. This condition will affect the decrease of pain intensity score on each respondent. It has been acquired that the degree of dysmenorrhea experienced by the respondents were decreasing after yoga was provided compared to the group which not provided with yoga.

4) The Affect of Yoga Practice on Degrees of Pain during Menstruation

According to Table 5, the result of statistical test by applying Wilcoxon test has resulted in 0.000 of p- value which means that H_0 is rejected of H_a is accepted, therefore, it can be concluded that there is an impact of yoga practice on degrees of pain during menstruation of female nursing students in UNRIYO. The mean of menstruation pain scale on female nursing students in 2015-2017 classes of UNRIYO before the yoga practice is 5.00 (moderate pain) and the mean of menstruation pain scale after the yoga practice is 3.00 (mild pain).

Teenage girls will have maturity phase on their reproduction organs and one of the indications of the maturity of female reproduction organs is the menstruation¹⁷. Menstruation is the periodical release of liquid from vagina, there are many irritations during menstruation such as dysmenorrhea. Dysmenorrhea is the cramp of pain which felt in the stomach to waist area, the cause of dysmenorrhea is high release of prostaglandin. Dysmenorrhea is the menstrual pain as a condition that could disrupt any activities and require medication which indicated by pain or sore in the stomach and pelvis area [10].

The management of dysmenorrhea can be performed by using pharmacological therapy such as the use of anti-pain medication and alternative therapies, one of the alternatives that able to reduce dysmenorrhea is by physical exercise or yoga practice. Sports or physical exercise has been proven to be able of improving four to five times of β -endorphin level within the blood. The release of endorphin could increase the response of parasympathetic nerve that cause vasodilation of blood vessel in the entire body and uterus as well as increasing the uterine blood flow, thus, it minimizes the intensity of dysmenorrhea pain[8].

Further management on dysmenorrhea pain is indispensable to reduce the pain that being experienced. Yoga is chose to overcome dysmenorrhea because it considered as the physical exercise that can be done by anyone, at anytime, with minimum cost without using specific tools. Yoga is one of the relaxation techniques which could produce endorphin hormone. This hormone can be functioned as natural sedative which produced by brain that generates comfort and to reduce the pain during contraction. This research is

consistent with the study conducted in which the result of her study has acquired 5.10 of mean pain scale before the yoga practice and 2.55 of mean pain scale after the yoga practice, thus, it can be concluded that the yoga movements are effective in decreasing the pain scale of dysmenorrhea with 0.000 significance value on students of Al-Fattah Junior High School of Semarang.

Stretching postures in conducting yoga exercise with bent body or lean forward can be beneficial in giving comforting and relaxing sensation. One of the benefits of yoga is improving the blood circle. The stretching as the result of the movements could improve blood circulation, even increase the amount of small blood vessel, therefore, it could improve blood circulation and intake toward the tissue. The posture by flexing hip joints is really good to release tensions on hip joints, flexing hamstring muscle and knee joints, accelerating blood circulation toward the pelvis and able to reduce menstrual pain. Performing relaxation through yoga could discontinue the production of estrogen and progesterone sex hormone as well as adrenaline stress hormone that could manufacture pain[18].

The research results have indicated that after yoga exercise was performed on female nursing students in 2015-2017 classes of UNRIYO who experience menstrual pain, it has been proven to decrease the pain scale. Respondents expressed that the degrees of pain that being experienced were decreasing and their back felt more comfortable. This research results could show that yoga exercise can provide a relaxing impact toward the decreasing pain scale of dysmenorrhea.

Yoga practice could provide relaxing impact as well as self-control during inconvenience of painful feeling, physical stress and emotion on pain. Practicing yoga regularly will give massive benefits such as improving the function of endocrine gland in the body, forming sturdier body posture, more flexible muscle and able of improving the capacity of lungs during the respiration, reducing body, mind, and mental tensions as well as decreasing pain during menstruation.

Yoga could relieve pain associated with dysmenorrhea (menstruation cycle disruption) and the excessive level of pre-menstruation tensions. The training of yoga relaxation has to be conducted more frequently as the supplementary or the alternative of pharmacological therapy for menstrual dysfunction and pain[19]. This condition is consistent with the research conducted who mentioned that there was an effectiveness of yoga practice on pre-menstruation symptoms in Taiwan. Yoga has positive effect, the activities of brain wave and alpha brain wave are associated with peaceful state, relaxation, creativity, mood enhancement, and serotonin release, thus, the increasing rate of alpha brain wave is indicating that the participants are feeling more relaxed after yoga practice. In a relaxed condition, body will stop the production of adrenalin hormone and all hormones required when pain occurs. This condition emerges because pain is a subjective matter and the amount of the felt pain could only be described by the individual who experience it. This condition will affect the decrease of pain intensity score on each respondent.

Relaxation effect causes the improvement of parasympathetic nerve response that able to cause vasodilatation effect of uterine blood vessel, thus, uterine blood flow increases and uterine contraction decreases. Mechanoreceptors stimulus on abdominal skin can generate relaxation effect of abdominal muscle and distraction, thus, abdominal cramps that being experienced is decreasing. Thus, it can be concluded that yoga practice could reduce the intensity of dysmenorrhea pain by giving relaxing and distracting effects [20].

4. CONCLUSIONS

- a) Average age of female nursing students of Nursing Science Undergraduate Program is 20 years.
- b) Mean scale of menstruation pain on female nursing students of Universitas Respati Yogyakarta before yoga practice was provided is 5.15.
- c) Mean scale of menstruation pain on female nursing students of Universitas Respati Yogyakarta after yoga practice was provided is 3.00.
- d) There is an impact of yoga practice on degrees of pain during menstruation of female students of Nursing Science Undergraduate Program in UNRIYO.

5. RECOMMENDATION

- a) For Universitas Respati Yogyakarta: The results of this research can be used as reference to organize yoga exercise program once a week to reduce the number of dysmenorrhea event on female students of UNRIYO.
- b) For respondents: Respondents could implement yoga practice as an alternative treatment to reduce menstrual pain.

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