

## Influence of Zinc Tablets Administration to Primary Dysmenorrhea Pain Level

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### Abstract

**Background:** Dysmenorrhea is a form of symptom, not a disease. Almost all women experience the feel of discomfort during menstruation, such as the feeling of unease in the inferior part of the abdomen accompanied by nausea, headache and even unconscious.

**The Objective:** The purpose of this research is to understand the influence of zinc tablets to cure the administration of primary dysmenorrhea pain levels.

**Method:** This research is quantitative research with a quasi-experimental method for using one-group pretest and posttest. Saturated sampling is applied by fulfilling inclusive and exclusive criteria. The statistical test used is the Wilcoxon test. Zinc administration is done four days before menstruation using zinc dose of 30 mg/day.

**Result:** This research denotes the  $p$  values = 0.001, smaller than  $\alpha = 0.05$  indicating the acceptance of the alternate hypothesis that there is an influence of zinc tablets administration to primary dysmenorrhea pain levels.

**Conclusion:** Zinc is proven useful as a therapy for dysmenorrhea due to the effect may reduce the synthesis of prostaglandins through its ability as an anti-inflammatory and antioxidant endogenous catalyst.

**Keywords:** Zinc tablets, pain levels, primary dysmenorrhea

### 1. INTRODUCTION

Menstruation disorders that often occurs in teenagers are dysmenorrhea which is a pain during menstruation (Price and Wilson, 2006). Dysmenorrhea may be a symptom that most often cause women directly go to the doctor for consultation and treatment (Wiknjastro, 2008). Dysmenorrhea causes discomfort in daily physical activity. This complaint relates to repeated absenteeism at school or in the workplace so that it can interfere with productivity (Khorsidi et al., 2003). Dysmenorrhea pain intensity and interference levels are probably not the same for every woman. Some are still able to move but some are not able to do any activity, and this will degrade the quality of life in each (Proverawati and Misaroh, 2009).

To cope with dysmenorrhea can be done with pharmacological and non-pharmacological therapy (Dawood, 2006). Among other non-pharmacological treatment, hot packs, exercise,

Mozart therapy, and relaxation (Proverawati and Misaroh: 90). Among the various types of the procedure mentioned above, supplement treatment is mostly researched, including the provision of vitamin E, B1, B6, fish oil or group of micronutrients such as magnesium, and zinc to cope with menstrual pain (Antao et al., 2005).

Zinc has been investigated as a therapy for dysmenorrhea due to its effect that may reduce the synthesis of prostaglandins through its ability as an anti-inflammatory and endogenous antioxidant catalyst that can improve micro-circulation of the blood vessels. Research conducted by Eby (2006) found women who consumed 31 mg zinc/day did not experience menstrual pain, compared with women who drank 15 mg zinc/day. Zinc does not require large doses to induce a therapeutic effect so that the side effects from large doses of zinc can be avoided. However, research as an adjunct therapy to prevent menstrual pain is still very limited, so further research is needed.

### 2. MATERIALS AND METHODS

This research is an explanatory research with a cross-sectional design. In this study, the univariate analysis was used to determine the proportion of each study variable. The data have been obtained in this study then performed statistical tests to test bivariate investigation, conducted by analysis of relationships using the Wilcoxon test to assess whether the mean and the diversity of the two groups were statistically different from each other. The sample was 22 female students of a three-year associate degree majoring in Midwifery program at Health Polytechnic Minister of Health Semarang located in Magelang, Indonesia.

### 3. RESULTS AND DISCUSSION

Age of menarche dysmenorrhea primer on student primarily occurs at the age of 12 years of the 12 respondents (54.5%). Results were per Baziad (2008) primary dysmenorrhea often discovered at a young age. Pain often appears immediately after menstruation regularly. Pain is usually felt as a uterine spasm and spastic and often accompanied by nausea, vomiting, diarrhea, fatigue, and headache. Menstrual pain arises to precede menstruation and increase in the first or second day of menstruation.

Menstrual cycle students who have a primary dysmenorrhea mostly regular menstrual cycle as many as 15 respondents (68.2%) This is consistent with the theory (Wiknjastro 2008) that the typical menstrual cycle length is considered a classic menstrual cycle of 28 days. Instead, Anurogo and Wulandari (2011) point out that on average women experience menstrual period for 21-40 days. Only about 15 percent of women who suffer menstrual cycle for 28 days. According to Norwitz and Schorge (2007: 13), the ovulatory menstrual period usually lasts between 24 to 35 days, and the average is 28 days.

Personality types of students who have a primary dysmenorrhea majority have type *sanguine* as many as 11 respondents (50%). The character of sanguine nature is emotional, volatile, and easily influenced by others. In girls who are emotionally unstable, especially if they do not get a good light on the process of menstruation, it will easily arise dysmenorrhea. Teens who have a dysmenorrhea complaint due to psychological factors are emotionally unstable (Wiknjastro, 2008).

Results of the research have been done on the midwifery students indicates that respondents who experienced dysmenorrhea before administration of zinc tablets, four respondents (18.2%) had mild pain, 14 respondents (63.6%) had moderate pain, and which experiencing severe suffering as much as four female students (18.2%). What these results correspond to complaints dysmenorrhea grievances in the teens to young adults.

Dysmenorrhea is pain that accompanies menstruation can interfere with activities of daily life (Manuaba & Chandranita, 2010). This could be due to low levels of progesterone at the end of *the corpus* causes menstrual pain. The decline in estrogen levels will lead to an increase in the synthesis of prostaglandins. According to Berek (2007) the decrease in progesterone in the luteal phase, the membrane liposomal even become unstable and sparked liposomal enzymes, the release of this enzyme causes the release of the *phospholipase* enzyme which acts on the conversion of phospholipids into arachidonic acid and activates the cyclooxygenase (COX). Furthermore PGF<sub>2α</sub> and arachidonic acid to prostaglandin E<sub>2</sub> (PGE<sub>2</sub>) through cycle *sendoperoxidase* mediated prostaglandin G<sub>2</sub> (PGG<sub>2</sub>) and prostaglandin H<sub>2</sub> (PGH<sub>2</sub>). Increased levels of prostaglandin have resulted in vasoconstriction of blood vessels spiral arteries. Vasoconstriction spiral arteries affect endometrial ischemia, and spongy part is causing necrosis uterine muscle contractions became stronger. The higher the intrauterine pressure, the harder the uterine contractions increasingly pinning the ends of the nerves. The pain flowed through the sympathetic nerve fibers and the simpatico and caused dysmenorrhea (Manuaba & Chandranita, 2010). Dysmenorrhea can also be caused by *organic* disorders such as uterus retroflex and uterine hypoplasia, and can be caused by psychological disturbances (Baziad, 2003).

The results of the 22 respondents after the intervention given the form of a zinc tablet: 1 student (4.5%) had no pain, 12 female students (54.5%) had mild pain, 6 female students experiencing moderate depression (27.3%), as well as 3 students suffered severe pain (13.6%).

These results indicate a significant difference between the intensity of dysmenorrhea pain before administration of zinc tablets and after administration of zinc tablets. Zinc dose used in

the study was 30 mg daily. The treatment is considered safe for a women 17-21 years of age is 150 mg/day (Fortier et al., 2008). The side effects if taken in excess zinc include nausea, bloating and discomfort in the digestive tract (Charu, 2012). In this study, based on respondents' statements none of the respondents who experienced nausea, bloating and discomfort in the digestive tract.

**Table1.** *Effect of zinc tablets against dysmenorrhea pain level*

Pain Levels	Before administering a zinc tablet		After taking zinc tablets	
	f	%	f	%
No pain	0	0	1	04.54
Mild pain	4	18.18	12	54.55
Moderate pain	14	63.64	6	27.27
Severe pain	4	18.18	3	13.64
	22	100	22	100

*P-value = 0.001*

The Wilcoxon test show the value of significance of 0.001 indicating the acceptance of the alternate hypothesis that received there is the effect of zinc tablets to primary dysmenorrhea pain intensity given to midwifery students in Magelang, Central Java, Indonesia.

Decreased levels of pain in this study significantly based on the analysis of test statistics supported by the research results Eby (2006) in his research on the granting of zinc. The study found that women who consumed zinc are 31 mg/day did not experience menstrual pain, compared with women who drank zinc is 15 mg/day. Giving zinc also reduce levels of Cox-2, an enzyme that involves in pain, inflammation and uterine cancer precursors.

Based on the zinc has the effect of reducing the synthesis of prostaglandins and ability as an anti-inflammatory and antioxidant can improve the circulation of blood vessels micro so will decrease uterine contractions cause the nerves in the uterus are not pinched again, and menstrual pain will be reduced (Manuaba & Chandranita, 2010).

Comparison of the intensity of dysmenorrhea pain before and after administration of zinc tablets administration show 11 respondents who changed the pain intensity after administration of zinc tablets, while 11 respondents are experiencing pain persists. This means that half of respondents are experiencing pain continues.

It is caused by several factors including emotional condition of the respondents. In general, the unstable adolescent emotions will lead to a lack of ability to master and control the feeling. These conditions resulted in teens prone to storm and stress, which is the period of storm and emotional pressures that occur due to hormonal changes. Stress, anxiety, panic, fear can trigger stressor hormones (catecholamine) so that the body's response is the opponent, run away, freeze and cause the uterus tense. Further, the blood flow is reduced, narrowed arteries and lead to pain.

**4. CONCLUSION**

There is the effect of zinc tablets to primary dysmenorrhea pain level with the Wilcoxon test results obtained significance value  $\alpha$ : 0.0001 ( $p = < 0.05$ ).

**ACKNOWLEDGMENT**

Speech delivered gratitude for the opportunity given to obtain research funds from the Ministry of Health Polytechnic Semarang so that this research can be accomplished.

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**Citation:** Mundarti, Sri Widatiningsih, Esti Handayani. *Influence of Zinc Tablets Administration to Primary Dysmenorrhea Pain Level*, *ARC Journal of Nursing and Healthcare*. 2017; 3(3): 35-38. doi: [dx.doi.org/10.20431/2455-4324.0303005](https://doi.org/10.20431/2455-4324.0303005).

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