



EFFECT OF DATES PALM EXTRACT ON THE STATUS OF ANEMIA IN ADOLESCENT GIRLS AT DEPARTMENT OF MIDWIFERY DORMITORY, HEALTH POLYTECHNIC OF HEALTH MINISTRY PONTIANAK

Rini Sulistiawati¹, Oon Fatonah Akbarini²

¹Department of Midwifery, Health Polytechnic of Health Ministry Pontianak,
rini.alfarisyi@gmail.com

²Department of Midwifery, Health Polytechnic of Health Ministry Pontianak,
oon.fatonah@yahoo.com

Abstract

Background: Anemia is one of the main nutritional problems in Indonesia. Anemia occurs as a result of iron and folic acid deficiency in the body as well as other factors such as infectious diseases, intestinal worms and chronic diseases. Adolescents have the highest risk of anemia due to increased needs and the presence of menstruation. If a woman has anemia then it becomes very dangerous during pregnancy and childbirth. It can cause a baby with low birth weight (LBW), miscarriage, anemia in infants and may result in maternal and infant deaths during childbirth. Anemia needs to be overcome early, before adolescent girl becomes pregnant woman and ready to be a healthy mother. One of the ways to prevent and cope with anemia is by consuming supplement or foods containing iron. Date palm extract is processed date fruit that contains 0.1-1.5 mg / 100 gr of iron. This component is important to form hemoglobin.

Objective: to know the effect of date palms extract on the status of anemia in adolescent girls in the Department of Midwifery Dormitory, Poltekkes Kemenkes Pontianak.

Method: is a Quasy Experiment pre and post test nonequivalent control group design. Population in this research is all adolescent girls at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak which amounts to 100 people. The samples were 22 adolescents in the treatment and control group. The sampling technique is simple random sampling. Test used are McNemar and Chi Square test with level of confidence 95%.

Result: This study result showed that there is a difference of anemia status before and after consuming date extract (p value = 0,004). The giving of date palms extract had a positive effect on anemia status (p value = 0,028).

Conclusion: This study showed that dates palm extract has effect on anemia status in adolescent girls at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak.

Keywords : Palm Dates Extract, Anemia, Adolescent Girls

Introduction

Anemia is one of the main nutritional problems in Indonesia. Anemia or lack of hemoglobin occurs as a result of iron and folic acid deficiency in the body as well as other factors such as infectious diseases, intestinal worms and chronic diseases.

Anemia can cause the body's metabolism and nerve cells do not work optimally, resulting decreased nerve impulses, disrupting the dopamine receptor system. The consequences of anemia include decreased of learning eagerness in children, lethargy, and decreased of



endurance. Anemia is very influential on reproductive health, especially in women. Women who have anemia during pregnancy and childbirth will have a risk of miscarriage, giving birth to a low birthweight baby (LBW), and anemia in infants. Anemia can also result in maternal deaths during childbirth due to haemorrhage (Tarwonto, 2007).

Women have the highest risk of anemia, especially in adolescent girls and pregnant women. Adolescent girls have the highest risk of anemia due to increased needs and the presence of menstruation. According to the World Health Organization (WHO) (2013), the prevalence of anemia in the world ranges from 40 to 88%. According to data from Basic Health Research (Riskesdas) in 2013, the prevalence of anemia in Indonesia is 21.7% with anemia patients aged 5-14 years old by 26.4% and anemia patients aged 15-24 years by 18.4%. By sex, men with anemia were 18.4% while women were 23.9%. Data on Household Health Survey (SKRT) in 2012 states that the prevalence of anemia in infants was 40.5%, pregnant women was 50.5%, postpartum was 45.1%, adolescent age 10-18 year was 57.1% and the age of 19-45 years was 39.5%. (Health Research and Development Agency, 2013).

Seeing high impact and prevalence of anemia in women, anemia prevention should be done early, before adolescent girls become pregnant so that the woman's physical condition is ready to be a healthy mother. One ways to prevent and cope anemia is by providing iron tablets, but many people do not like taking medicine. In addition, the use of iron tablets also has side effects such as nausea, vomiting, constipation and darker stools (Siti, 2013). Other alternative in taking iron tablets is by consuming dates palm. Dates palm has advantages including, high nutritional value, health and economic. (Khalid et al,

2016; Al-Sahib & Marshall, 2003). Dates palm extract is smoothed and extracted dates palm, liquid with thick consistency. Dates palm extract is black and sweet containing complete nutritional (Malhi et al, 2014). Dates palm extract has a high iron containing iron content of 0.1-1.5 mg / 100 gr (Baliga et al, 2011; Onuh et al, 2012, Saryono, 2016). This component is important to form hemoglobin (Saryono, 2016). Based on some studies indicate that there is effect of date palm extract to increase hemoglobin. (Zen, 2013; Nugroho, 2017; Pravitasari, 2009; Onuh et al., 2012)

Based on a preliminary survey conducted by the researchers of 15 girls at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak, it was found 9 adolescent girls (60%) anemic features, such as pale conjunctiva, frequent dizziness, dizzy eyes, lethargy, and often drowsiness. The purpose of this study was to determine the effect of dates palm extract on the status of anemia in adolescent girls at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak.

Method and Material

The study was carried out in the Dormitory Department of Midwifery of Health Polytechnic Pontianak from 1 until 14 August 2017. This research is descriptive analytic with research design using quasy experiment, pre and post test nonequivalent control group design. Population in this research is all adolescent girls in Department of Midwifery Dormitory of Health Polytechnic Pontianak which amounts to 100 girls. Sample in this study was divided into treatment and control group with sample size by 20% of the population. Sample size considered a 10% dropout from participants so that sample size in this



study was 44 people, covering 22 treatment and 22 control groups. Technique of sampling is simple random sampling that was the names of students enrolled in the Department of Midwifery Dormitory of Health Polytechnic Pontianak and met sample criteria. Sample used was based on inclusion criteria: Student level I; not experiencing severe and chronic illness especially disruption of Hb production; malignancy; not being on a diet (vegetarian); and not pregnant. Exclusion criteria include in the treatment process by using blood thinners and cannot consume dates palm extract for any reason. Criteria of drop out is withdrawing from research for any reason. Sample of treatment group is students or adolescent girls who meet the criteria of sample, Hb was checked by using a digital analyzer haemoglobin to determine Hb before being given intervention. After that, date palm extract was given. Dates palm extract was given \pm 20 grams or 1 tbsp each day for 2 weeks. After intervention, Hb was checked again to determine the effect of palm juice that had been given for 2 weeks. In the control group, meals were given to students who meet the study criteria according to the dorm menu without giving the date palm extract. In this group, Hb level was also checked by using a simultaneous digital hemoglobin analyzer when the treatment group performed Hb examination.

The test used in bivariable analysis is to know the difference of anemia status before and after date palm extract given is Mc Nemar test. To determine the effect of dates palm extract on anemia status, chi square test was used with significance level 95%.

Results

Based on data processing done through univariable analysis using computer to describe each variable using frequency

distribution, result obtained is as follows:

Table 1. Frequency distribution of anemia status in treatment group and control group

| | Treatment (n=22) | | Control (n=22) | | Σ | % |
|--|---------------------|------|-------------------|------|----------|------|
| | f | % | f | % | | |
| Anemia status before extract dates palm given | | | | | | |
| No anemia | 9 | 40,9 | 9 | 40,9 | 18 | 40,9 |
| Anemia | 13 | 59,1 | 13 | 59,1 | 26 | 59,1 |
| Anemia status after extract dates palm given | | | | | | |
| No anemia | 18 | 81,8 | 10 | 45,5 | 28 | 63,6 |
| Anemia | 4 | 18,2 | 12 | 54,5 | 16 | 36,4 |

Based on table 1., in the treatment group, respondents who experienced anemia before date palm extract given was 13 people (59.1%) and the respondents who experienced anemia after dates palm extract given decreased to as many as 4 people (18.2%). In the control group, respondents who had anemia were 13 people (59.1%) and respondents who had anemia after 2 weeks (after date palm extract given in treatment group) were 12 people (54.5%). Overall, respondents who suffered anemia at the time before dates palm extract given was 26 people (59.1%), and who experienced anemia after the dates palm extract given was 16 people (36.4%)

To know the difference of anemia status before and after of dates palm extract given in each treatment group and control group then Mc Nemar test used, with result as follows:



Table 2. Differences in anemia status before and after administration of dates palm extract in the treatment group

| | | Anemia status after extract dates palm given | | Total | P |
|---|-----------|--|---------|------------|--------|
| | | No anemia | Anemia | | |
| | | | | | |
| Anemia status before extract dates palm given | No anemia | 9(40,9) | 0(0,00) | 9(40,9) | 0,004* |
| | Anemia | 9(40,9) | 4(18,2) | 13(59,1) | |
| Total | | 18(81,8) | 4(18,2) | 22 (100,0) | |

* = based on Mc Nemar Test

According to table 2., the proportion of respondents who were not anemic before the dates palm extract given was 40.9% and the proportion of respondents who were not anemic after the date palm extract given increased to 81.8%. There was significant difference of anemia status before and after of dates palm extract given in treatment group (p value <0.05).

Table 3. Differences in anemia status before and after administration of dates palm extract in the control group

| | | Anemia status after extract dates palm given | | Total | P |
|---|-----------|--|----------|-----------|--------|
| | | No anemia | Anemia | | |
| | | | | | |
| Anemia status before extract dates palm given | No anemia | 6(27,3) | 3(13,6) | 9(40,9) | 1,000* |
| | Anemia | 4(18,2) | 9(40,9) | 13(59,1) | |
| Total | | 10(45,5) | 12(54,5) | 22(100,0) | |

* = based on Mc Nemar Test

Based on the table above, the proportion of respondents who were not anemic before the dates palm extract given was 40.9% and the proportion of respondents who were not anemic after the dates palm extract given increased to 45.5%. There was no significant difference in anemia status before and after administration of date palm extract in the control group (p

<0.05).

To see the effect between giving of date palm with anemia status in treatment group and control group then used Chi Square test, with result as follows:

Table 4. Effect of dates palm extract on anemia status in treatment group and control group

| Group | Anemia Status | | | | P Value |
|-----------|---------------|------|--------|------|---------|
| | No anemia | | Anemia | | |
| | f | % | f | % | |
| Treatment | 18 | 40,9 | 4 | 9,1 | 0,028* |
| Control | 10 | 22,7 | 12 | 27,3 | |
| | 28 | 63,6 | 16 | 36,4 | |

* = based on Chi Square

Based on table 4., giving of date palm extract effect on anemia status (p value <0,05).

Discussion

Based on the results of research conducted on 44 teenage girls with the provision of dates palm extract at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak, showed that adolescent girls prone to anemia (59.1%). From the results of research conducted on adolescent girls at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak showed significant differences in anemia status before and after the consume of dates palm extract within 2 weeks and the date palm effect on the status of anemia.

The results of this study are consistent with the Zen (2013) study showing changes in hemoglobin levels between the 4 treatment groups. They are K-I without treatment (standard feed and aquades), K-II (low feed Fe and aquades), K-III (low Fe feed, , and dates palm extract 50%), K-IV (low feed Fe, aquades, and 100% dates



palm extract) treatment lasted for 21 days. The average result of hemoglobin level in K-I was 12,03 gr / dl, K-II was 7.72 gr / dl, K-III was 9,25 gr / dl and K-IV was 10.35 g / dl. One way anova test gets p value <0,05. The result of post Hoc LSD test showed significant difference between K-I, K-II, K-III, and K-IV. Dates palm extract can increase hemoglobin levels in male white rats of wistar strains fed a low-iron diet. Similarly, the results of Nugroho's (2017) study showed that the dates can increase hemoglobin levels in female white rats by 3,59 mg gr/dl.

According to Almatsier (2006), nutrients that play a role in forming hemoglobin are iron, protein, pyridoxine (vitamin B6), which plays a role in the catalyst in hem synthesis in the molecule hemoglobin, vitamin C that affects the absorption and releases iron from transferin into body tissues, and vitamin E that affects the stability of the red blood cell membrane.

Iron is part of a molecule of hemoglobin. If the iron content decreases then the synthesis of hemoglobin will decrease so that the hemoglobin level decreases and results in low ability to deliver much needed oxygen throughout the body (Lopez, 2016; Saryono, 2016). Dates have efficacy in the treatment of anemia because it contains high enough iron that is 0.1-1.5 mg / 100 gr (Baliga et al, 2011; Onuh et al, 2012; Saryono, 2016). In addition, dates contain protein, fiber, glucose, vitamins, biotin, niacin, folic acid, and minerals like, calcium, sodium, and potassium which plays role in forming hemoglobin and help the absorption of hemoglobin in the body. (Sotolu et al, 2011; Al-Sahib & Marshall, 2003). Pravitasari (2009) states that the extract of dates can increase hemoglobin levels. The combination of dates are rich in glucose, Ca, Fe, Zn, Cu, P and niacin content with coconut (palmyra) rich in vitamin A and

coconut that are rich in Na and K content can improve hemoglobin levels in anemic patients.

The results showed that the effect of dates was a significant increase in red blood cells, hemoglobin, hematocrit, and the number of reticulocytes and platelets. This may be possible because the phytochemical of dates contains tannins, ascorbic acid and phenol on dates have a stimulatory effect of hemopoetic processes in the bone marrow (Onuh et al, 2012).

Conclusion

The conclusion in this research is there is difference of anemia status before and after dates palm extract given in adolescent girl at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak. Giving of dates palm extract affects the status of anemia in adolescent girls at Department of Midwifery Dormitory, Health Polytechnic of Health Ministry Pontianak.

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