



Infertility Patients Related To Menarche Age and Nutritional Status at Halim Fertility Center Clinic Medan

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ABSTRACT

Objective: This study aims to determine the relationship between Menarche Age and Nutritional Status on infertility patients. Infertility is one of the reproductive health problems that have not been completely resolved. Infertility is defined as the inability to have children or a condition where a married couple has not been able to have children even though they have had sexual intercourse 2-3 times a week for a period of 1 year without using contraception. Infertility affects the psychology of married couples so that it triggers marital problems such as divorce, and relationships that are not harmonious.

Methods: The research method used is quantitative analytic with a case control approach. Case control approach is a research that studies the influence of risk factors (independent) and effect factors (dependent), at the same time. The study was conducted at the Halim Fertility Center/HFC Clinic with the study population consisting of Couples of Childbearing Age (EFA) with the number of samples (Cases and Controls) taken proportionally 1:1, 40 Cases: 40 Controls, so the total sample size was 80 samples.

Results: The results of the bivariate analysis between the age of menarche and the incidence of infertility, statistically the Odds Ratio value was 3.85 (95% CI; 1.38-10.764), meaning that respondents with abnormal menarche age had a 3.85 times greater risk of experiencing infertility compared to respondents who have normal age of menarche. With p-value = 0.016, it means that there is a significant relationship between the age of menarche and the incidence of infertility. It can be concluded that the abnormal age of menarche is a risk factor for infertility. The results of the bivariate analysis between nutritional status and the incidence of infertility statistically obtained the Odds Ratio value of 4.846 (95% CI; 1.43-16.42) meaning that respondents who were obese had a 4.846 times greater risk of experiencing infertility compared to those who were not obese. . With p-value = 0.016, it means that there is a significant relationship between nutritional status and the incidence of infertility. It can be concluded that nutritional status is a risk factor for infertility. The results of the independent variables (age of menarche, and nutritional status) met the candidate requirements for inclusion in the multivariate test.

Conclusion: The factors of age at menarche and nutritional status have a risk for the incidence of infertility in couples of childbearing age at the Halim Fertility Center Clinic in Medan. It can be concluded that the age of menarche and nutritional status have a significant relationship with the incidence of infertility.

Keywords: Infertility, Age at menarche, Nutritional status

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INTRODUCTION

Infertility is a disease of the reproductive system that can be defined as failure to achieve pregnancy with a period of sexual intercourse without the use of contraceptives for 12 months¹. Infertility is also called the inability to have children or a condition where a husband and wife have not

been able to have children even though they have had sexual intercourse 2-3 times a week for a period of 1 year without using contraception². The World Health Organization (WHO), estimates that there are cases of infertility in 8-10% of couples. If the global population is

around 50-80 million couples, then 1 in 7 couples or about 2 million new infertile couples every year and this number is expected to continue to increase in the future. The incidence of primary infertility in Asia is mostly found at the age of 20-24 years, namely in Cambodia 30.8%, in Kazakhstan 10%, Turkmenistan 43.7%, Uzbekistan 9.3% and Indonesia 21.3%³.

Based on the research that has been done, there are several factors that influence the occurrence of infertility such as the age of women > 35 years, lifestyle (such as smoking, alcohol consumption), the occurrence of extreme weight loss or increase, physical and emotional stress that causes amenorrhea, the presence of comorbidities in children. reproductive organs³, and partial relationship between nutritional status and primary infertility in couples of childbearing age⁴. So that infertility is one of the reproductive health problems that occurs especially in developing countries such as Indonesia. The current prevalence of infertility in Indonesia is 12-15% of 40 million couples of childbearing age⁵. According to the population census in rural and urban areas, there are about 3 million infertile couples spread throughout Indonesia⁴, including in North Sumatra.

Halim Fertility Center (HFC) Clinic is the first clinic in North Sumatra to serve programs that include services such as; IVF program, induction superovulation (IUI) program, embryo, oocyte, and sperm freezing program, 3-dimensional ultrasound examination, reproductive health

examination program and fetal defect screening program. Patients who visit the HFC Clinic are dominated by PUS (fertile age couples) who are infertile so they follow the program to the HFC clinic. The average number of patients every month is around 80-150 people. Therefore, it is necessary to conduct research on infertility related to the age of menarche and nutritional status at the Halim Fertility Center Clinic in Medan. This study aims to determine the relationship between age of menarche and nutritional status on the incidence of infertility.

METHODS AND MATERIALS

The research method used is quantitative analytic with a case control approach. Case control approach is a research that studies the effect of risk factors (independent) and effect factors (dependent), at the same time⁶. The study was conducted at the Halim Fertility Center/HFC Clinic with the study population consisting of Couples of Childbearing Age (EFA) with the number of samples (Cases and Controls) taken proportionally 1:1, 40 Cases: 40 Controls, so the total sample size was 80 samples.

RESULTS AND DISCUSSION

Distribution of Respondents Characteristics

The description of the distribution of respondents' characteristics based on age of menarche and nutritional status with the incidence of infertility can be seen in Table 1.

Table 1: Frequency Distribution Based on Characteristics of Respondents Seen from Menarche Age, and Nutritional Status with Incidence of Infertility at Halim Fertility Center Clinic Medan

No	Characteristics of Respondents	Case		Control		Total	
		n=40	%	n=40	%	n=80	%
	Age of Menarche						
1	Abnormal	18	45,5	7	17,5	25	31,3
2	Normal	22	55,0	33	82,5	55	68,7
	Nutritional status						
1	No Obesity	14	35,0	4	10,0	18	22,5
2	Obesity	26	65,0	36	90,0	62	77,5

Based on table 1, it can be seen that at the age of menarche, there are more respondents who have a normal age of menarche, namely 55 people (68.7%). Meanwhile, 25 respondents (31.3%). In the case group, there were more respondents who had normal menarche age, as many as 22 people (55.0%). Likewise, in the control group, there were more respondents who had normal menarche age, as many as 33 people (82.5%).

Based on nutritional status, there were more respondents who were not obese as many as 62 people (77.5%). While

respondents who are obese as many as 18 people (22.5%). In the case group, there were more respondents who were not obese as many as 26 people (65.0%). Likewise in the control group, there were more respondents who were obese as many as 36 people (90.0%).

The Relationship between Menarche Age and Infertility Incidence

The description of the results of the cross tabulation between the age of menarche and the incidence of infertility can be seen in table 2.

Table 2: Cross Tabulation Between Age of Menarche and Incidence of Infertility at Halim Fertility Center Clinic Medan

Age of menarche	Case		Control		X ² sig-p	OR CI 95%
	Infertility		Non infertility			
	n	%	n	%		
Abnormal	18	45,0	7	17,5	5,818 0,016	3,85 (1,38-10,764)
Normal	22	55,0	33	82,5		
Total	40	100,0	40	100,0		

Based on the data in table 2, the results of the bivariate analysis between the age of menarche and the incidence of infertility, statistically the Odds Ratio value was 3.85 (95% CI; 1.38-10.764), meaning that respondents with abnormal age at menarche had a risk of 3.85 times greater experience infertility compared to respondents who have normal age of menarche. With p-value = 0.016, it means that there is a significant relationship between the age of menarche and

the incidence of infertility. It can be concluded that the abnormal age of menarche is a risk factor for infertility.

Relationship between Nutritional Status and Incidence of Infertility

The description of the results of the cross tabulation between nutritional status and the incidence of infertility can be seen in table 3.

Table 3: Relationship between Nutritional Status and Incidence of Infertility

Nutritional status	Case		Control		X ² sig-p	OR CI 95%
	Infertility		Non infertility			
	n	%	N	%		
Obesity	14	35,0	4	10,0	5,806 0,016	4,846 (1,43-16,42)
No Obesity	26	65,0	36	90,0		
Total	40	100,0	40	100,0		

The results of the bivariate analysis between nutritional status and the incidence of infertility statistically obtained an Odds Ratio value of 4.846 (95% CI; 1.43-16.42) meaning that respondents who were obese had a 4.846 times greater risk of experiencing infertility compared to those who were not obese. With p-value = 0.016, it means that there is a significant relationship between nutritional

status and the incidence of infertility. It can be concluded that nutritional status is a risk factor for infertility.

Bivariate Analysis

The description of the results of the bivariate analysis of factors for infertility can be seen in table 4 below:

Table 4: Variables that became candidates for the multivariate test with p value < 0.25 in the Bivariate Analysis of Infertility Occurrence Factors at the Halim Fertility Center Clinic, Medan.

No	Variable	X ² (value p)	OR (CI 95%)
1	Age of menarche	5,818 (0,016)	3,85 (1,38-10,76)
2	Nutritional status	5,804 (0,016)	4,84 (1,43-16,42)

Table 4 shows that the independent variables (age of menarche, and nutritional status) met the candidate requirements for inclusion in the multivariate test. Previous research explained that there was a significant relationship between age at menarche and nutritional status. With normal nutritional status ($\beta=-0.2$) and an average age of menarche 11.9 years and p-value (0.001)⁷.

Infertility is one of the reproductive health problems that need to be prevented. Several factors that cause infertility are primary factors and secondary factors. Primary factors such as genetics, hormones, genetics, reproductive system diseases and others. While the secondary factors consist of lifestyle (obesity, diet, smoking, and alcohol), the presence

of babies born with unsafe methods, radiation, stress and sexual diseases⁸.

Relationship between Menarche Age and Infertility

The results of the analysis explained that the majority of respondents with normal age of menarche were 55 people (68.7%) and from 80 research respondents, 40 people (50.0%) were cases and 40 people (50.0%) were not controls. The results of the chi-square analysis showed that the age of menarche had a significant relationship with the incidence of infertility ($p=0.016<0.05$) with OR=3.85.

Menarche is the period of the first menstrual period and occurs at the age of 10-14 years (may vary) because at this

age the reproductive organs grow rapidly until they reach maturity to be able to reproduce⁹. This period occurs because of changes in hormone levels throughout the menstrual cycle caused by feedback between steroid hormones and gonadotropin hormones¹⁰. The mean age of menarche was 12.8 years¹¹. Statistical data shows that the age of menarche is influenced by various factors such as heredity, nutritional status and general health¹².

Studies showing that the age of menarche affects the incidence of infertility have never been done, but previous studies have explained that the age of menarche is associated with the incidence of endometriosis, where endometriosis can cause blocked fallopian tubes resulting in infertility. Endometriosis is the growth of endometrial tissue, both glands and stroma outside the uterine cavity or myometrium and is a gynecological disorder associated with infertility with manifestations of damaging the tubal and ovarian anatomy¹³. Based on a 2016 study in Semarang City, endometriosis cysts have an 8.08 times risk of infertility¹⁴. Endometriosis is more common in women who experience menarche at the age of 11 years or 14 years¹⁵. Based on the results of research by Rudyanti & Riyanti¹⁶, concluded that there was a significant relationship between the age of menarche and the incidence of uterine myoma. Based on the research of Oktarina et al¹⁷, explained that endometriosis and uterine myoma are the most common comorbidities found in infertile women.

Several studies reveal the main factors in accelerating the age of menarche including nutritional factors. Overweight/obese children experience menarche more quickly than children with normal weight. A study with a cross-sectional design conducted in Kuwait by Al-Wadhi et al¹⁸, explained that normal child weight was a protective factor against the incidence of menarche (OR: 0.84; 95% confidence interval (CI): 0, 77-0.93). In general, adolescents who experience early puberty will have a higher Body Mass Index (BMI), on the other hand, late puberty tends to have a smaller BMI¹⁹. Nutritional and health conditions in adolescent girls can be seen from the value of the Body Mass Index (BMI). An earlier age of menarche has been associated with an increase in BMI²⁰.

Based on observations at the research location, it is known that the age of menarche is also a factor that can affect the occurrence of infertility in couples of childbearing age, but the age of menarche is not the most dominant factor influencing the occurrence of infertility, especially at the Halim Fertility Center Clinic in Medan.

Relationship between Nutritional Status and Infertility

The results of the analysis showed that the majority of respondents were not obese as many as 62 people (77.5%) and from 80 research respondents, 40 people (50.0%) were cases and 40 people (50.0%) were controls. The results of the chi-square analysis showed that nutritional status had a significant relationship with the incidence of infertility ($p=0.016<0.05$) with OR=4.846.

Nutritional factors are also very important in supporting fertility because a person's fertility is not only influenced by genetics, heredity and age are also influenced by nutritional status. Body Mass Index (BMI) is the most frequently used and practical indicator to measure nutritional status in

adults. Body weight and changes in body weight that exceed normal weight or less than normal weight will affect the incidence of delayed conception²¹. Statistically, nutritional status is associated with infertility such as obesity. Obese women have a 78% greater risk of experiencing infertility compared to women who are not obese. Meanwhile, men who are obese have a 49% higher risk than those of normal weight and if both partners of childbearing age are obese, the risk of infertility is 2.74 times²². If a person is overweight (overweight) or is overweight (obesity), or in other terms has a body 10%-15% of the normal body or is obese, then that person will suffer from hormonal balance disorders and increased follicle growth in the ovaries. This is called Polycystic Ovary Syndrome (COPD)²³. Polycystic Ovary Syndrome (PCOS) is triggered by the occurrence of insulin resistance which is commonly experienced by patients with diabetes mellitus²⁴. Excessive nutritional status such as obesity affects the body's hormone function, fat produces the hormone estrogen which results in menstrual cycle disorders⁸.

The relationship between nutritional status and infertility is also related to lifestyle. Lifestyle habits such as smoking and consuming alcohol can cause infertility. Some substances contained in cigarettes are substances that are harmful to the oocytes, thereby reducing fertility levels. Excessive alcohol consumption can interfere with the function of the hypothalamus and pituitary so that it can cause ovulation disorders. Excessive activity (> 3-5 hours/day) can also reduce female fertility²⁵.

The results of observations at the research location revealed that obesity is one of the factors that affect the incidence of infertility in couples of childbearing age at the Halim Fertility Center Clinic in Medan, there are several respondents who have a diagnosis of obesity, and this is one of the factors that can inhibit the occurrence of pregnancy.

CONCLUSIONS

Based on the results of research and data analysis on factors such as age at menarche and nutritional status that have a risk of infertility in couples of childbearing age at the Halim Fertility Center Clinic in Medan, it can be concluded that age at menarche and nutritional status have a significant relationship with the incidence of infertility.

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