

## FACTORS AFFECTING THE INCIDENCE OF INFERTILITY

Rosdiana\*, Sukarni Setya Yuningsih

STIKES Abdi Nusantara, Jl. Swadaya No. 7, Jatibening, Pd. Gede, Bekasi, West Java 17412, Indonesia

\*[rosdiana.rifqi@gmail.com](mailto:rosdiana.rifqi@gmail.com)

### ABSTRACT

Infertility has become a global concern, not least in Indonesia, where the number continues to increase. Infertility will have a negative impact on society, especially in Indonesia, namely in addition to social and family problems that arise due to infertility, there is a problem that has become the main focus of several researchers in the world, namely decreased sexual satisfaction. The purpose of this study was to analyze the influence of age, body mass index, occupation, and menstrual cycle factors on the incidence of primary and secondary infertility. The design of this study is Case-Control. The location used for research in the working area of the Pabuaran Health Center from May to June 2023. The samples used for the case were 15 infertile pairs and 30 for control so that a total of 45 samples, the sampling technique used was total sampling. The multivariate analysis used in this study was multiple logistic regressions. Obesity increased the incidence of infertility up to 2 times and was statistically significant (aOR: 2.34; 95%CI 1.75 - 61.45; p value 0.010) and abnormal menstrual cycles increased the risk of infertile events by 1.8 times and were statistically significant (aOR: 1.85; 95%CI 0.95 - 42.25; p value 0.046).

Keywords: infertility; menstrual cycle; obesity

### INTRODUCTION

Globally, the problem of infertility has become a concern in 190 countries, revealed 48.5 million infertile couples of which 19.2 million suffer from primary infertility, while 29.3 million are diagnosed with secondary infertility. The cause of infertility can be found in women or in men, sometimes even in both. In women, infertility can be due to impaired reproductive function from birth or due to environmental influences such as genital etiology, extragenital diseases, or psychological factors. Factors causing infertility are also influenced by men including genital etiology, problems with sperm production, sperm distribution problems in the genital system, disorders that inhibit erection and ejaculation. In 10%-15% of cases, the etiology of infertility is still idiopathic or has no known cause (Starc et al. 2019). In Indonesia, based on data released by the In Vitro Federation (FIV), at least 1,712 men and 2,055 women experienced infertility. or indirectly this incident occurs in 20% of married couples. The increase in prevalence occurs based on various factors such as the age of 35-39 years 30% and at the age of 40-44 it is likely to increase to 55%. Various other risk factors can also affect the incidence of infertility such as: lifestyle, alcohol consumption, smoking, BMI and job stress (Jatmiko, 2019).

Infertility will have a negative impact on society, especially in Indonesia, namely in addition to social and family problems that arise due to infertility, there is a problem that has become the main focus of several researchers in the world, namely decreased sexual satisfaction (Akbar, 2020). Research conducted by (Czyżkowska, 2016) on 50 women with a history of infertility reported that infertile women reported lower sexual satisfaction, dysfunction in sexual reactivity, and more maladaptive patterns of dyadic function ( $P \leq 0.001$ ). In addition, infertile women reported significantly higher rates of depressive symptoms than women from the control group ( $P \leq 0.001$ ). A significant negative correlation was also observed in the duration of sexual intercourse which tended to be shorter in infertile women ( $P \leq 0.05$ ). Given that in Indonesian culture children are one

of the pride of the family, the incidence of infertility needs to be wary of. Puskesmas as a primary service for the community will need information first in terms of fertility, so puskesmas officers must fully understand the risk factors that can cause infertility. This makes researchers interested in conducting research related to factors that are a risk for infertility in the work area of the Pabuaran Health Center in 2023.(Severus, 2019)

## METHOD

This study is a type of intervention research with a Case-Control design. The location used for this research is in the working area of the Pabuaran Health Center from May to June 2023. The samples used in this study were all pairs included in the primary and secondary infertile categories, the sampling technique used was total sampling for cases of 15 infertile couples and 30 for control so that a total of 45 samples. The comparison of the number of samples for this study was 1:2 for case and control. The dependent variables in this study were infertile conditions both primary and secondary and the independent variables were age, obesity, employment status and menstrual cycle. The bivariate analysis used in this study is to determine whether there is a relationship between two variables (independent and dependent variables), namely the chi-Square test. The multivariate analysis used in this study was multiple logistic regressions.

## RESULT AND DISCUSSION

Table 1.  
 Characteristics of respondents

Variable	Fertility Conditions		Total (%) (n=45)
	Infertile (%) (n = 15)	Not Infertile (%) (n = 30)	
Age			
Age is not ideal (> 35 years)	12 (26.7)	12(26.7)	24 (53.3)
Ideal age (20 – 35 years)	3 (6.7)	18 (40)	21 (46.7)
Body Mass Index			
Obesity (BMI > 30)	12 (26.7)	8(17.8)	20 (44.4)
Usual	3 (6.7)	22 (48.9)	25 (55.6)
Work			
Not Working	8 (17.8)	23 (51.1)	31 (68.9)
Work	7 (15.6)	7 (15.6)	14 (31.1)
Menstrual Cycle			
Usual	3 (6.7)	16(35.6)	19 (42.2)
Abnormal	12 (26.7)	14 (31.1)	26 (57.8)

Table 1 characteristics of respondents, it can be seen that the majority of women who are infertile are women over the age of 35 years, some even almost reach 40 years. Infertile women also have a body mass index above 30 and have abnormal menstrual cycles.

Table 2.  
Bivariate Analysis

Variable	OR	CI 95 %		p
		Upper limit	Lower Limit	
Age too old	6	1.39	25.85	0.014
Obesity	11	2.45	49.38	0.001
Work	2.8	0.76	10.77	0.172
Abnormal menstrual cycle	4.5	1.06	19.57	0.054

Table 2 based on the bivariate analysis table, it is known that occupational factors and abnormal menstrual cycles do not have a significant relationship with infertile events. While other factors based on the strongest association are obesity and too old age. Obesity can increase the incidence of infertility up to 11 times and is statistically significant (OR: 11; 95%CI 2.45 – 49.38; p value 0.001) and too old age can increase the risk of infertile events up to 6 times and is statistically significant (OR: 6; 95%CI 1.39 – 25.85; p value 0.014).

Table 3.  
Multiple Logistic Regression Analysis

Variable	Adjusted Odds Ratio (aOR)	CI 95 %		p
		Upper limit	Lower Limit	
Age too old	1.05	0.47	17.11	0.250
Obesity	2.34	1.75	61.45	0.010
Work	1.38	0.68	23.02	0.124
Abnormal menstrual cycle	1.85	0.95	42.25	0.046

Table 3 based on the bivariate analysis table, it is known that occupational factors and age that are too old do not have a significant relationship with infertile events. While other factors based on the strongest relationship are obesity and irregular menstrual cycles. Obesity can increase the incidence of infertility up to 2 times and is statistically significant (aOR: 2.34; 95%CI 1.75 - 61.45; p value 0.010) and abnormal menstrual cycles can increase the risk of infertile events by 1.8 times and are statistically significant (aOR: 1.85; 95%CI 0.95 - 42.25; p value 0.046). In this study, the results of multivariate analysis in the form of multiple logistic regression have regulated and accommodated confounding factors so that the results displayed are more reliable. In bivariate analysis, there is an overestimate of almost all variables.

These results are in line with research that states globally 13% of men and 21% of women in the world are classified as obese according to their basal metabolic index (BMI) (Smurthwaite, 2017). Overweight women are less likely to ovulate and it is difficult to be able to conceive spontaneously even after infertility treatment. Obesity can affect male and female reproduction through the endocrine, thermal, genetic and sexual mechanisms (Hart 2016). Obesity has an effect on the menstrual cycle because of the accumulation of excess fat that interferes with the work of reproductive hormones such as estrogen, FSH (*follicle stimulating hormone*), and LH (*Luteinizing Hormone*) (Putri, 2021). This will cause irregular ovulation can be caused by many problems, including PCOS (*Polycystic Ovary Syndrome*), obesity, underweight, and thyroid problems. While severe pain during menstruation can be an indicator of a condition where there is tissue in a place that should not be and become one of the signs of endometriosis which is a risk factor for infertility (JAMHARIYAH, 2022) The menstrual cycle is the distance between the start date of the last menstrual period and the next menstruation. The day bleeding begins is called the first day of the

menstrual cycle (HPHT). Because we cannot know the exact time of discharge of menstruation from the external ostium uterini, it would be normal if the calculation of cycle length contains an error of approximately 1 day (Fatimah, 2019).

The normal menstrual cycle length or considered a common menstrual cycle is 28 days. The average menstrual cycle length in girls aged 12 years is 25 days, in women aged 43 years 27 days, and in women aged 55 years 52 days. So, it's actually only 10-15%. Women have a menstrual cycle of 28 days (Yuliarfani, 2022). Menstrual cycle disorders can also be one of the risk factors and signs of infection or abnormalities that can cause infertility such as polycystic ovarian syndrome (PCOS) or polycystic ovary syndrome (Vander Borgh, 2018). This endocrine disorder affects women under 18 to 44 years of age, the normal functioning of hormones plays an important role in the function and regulation of the ovaries, a good and regular menstrual cycle can maintain fertility. If there is a disruption of hormone levels in women, it will interfere with ovarian functioning which leads to the formation of cysts in the ovarian sac (Ajmal, 2019).

## CONCLUSION

The occupational factors and age that are too old do not have a significant relationship with infertile events. While other factors based on the strongest relationship are obesity and irregular menstrual cycles. Obesity can increase the incidence of infertility up to 2 times and is statistically significant. and abnormal menstrual cycles can increase the risk of infertile events by 1.8 times and are statistically significant.

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