

Conference Paper

Characteristic and Pregnancy Rate of IVF Patient: A Retrospective Analysis from Two Centres

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Abstract

Introduction. According to recent statistics, infertility in Indonesia reached 21,9%. In-vitro fertilization (IVF) was a reliable treatment option for subfertility couples with success rate of 22-40%. Data from the Indonesia Association for In-Vitro Fertilization (Perfitri) in 2010 showed the country had only 2000 cases, one third of Vietnam's and half of Thailand's. The technology's high cost has been cited as the cause behind the slow development of IVF in Indonesia. **Objective.** We aim to evaluate the characteristics of patients and their pregnancy rate following in vitro fertilization in infertile couples from two different centres, Yasmin Clinic and Kedoya Clinic. **Material and Methods.** Cohort retrospective was used to analyse outpatient data from two fertility centres. A total of 510 outpatients' data, 405 in Yasmin Clinic and 105 in Kedoya Clinic, between October 2014 to September 2015 was collected. Patients and in vitro fertilization cycle characteristics from both clinics were evaluated. The pregnancy rate after IVF was compared between the groups. **Result.** Although maternal age ($p=0,032$) and paternal age ($p=0,017$) were statistically significant, they were not clinically significant. There were also no significant differences in the characteristics of in vitro fertilization in both clinics, clinically. However, pregnancy rate was higher in Yasmin Clinic than in Kedoya Clinic, with pregnancy rate of 64,8% and 45,7%, respectively (OR = 2,185; 95%CI 1,420-3,361; $p=0,001$). **Discussion.** There were no differences between characteristics of patients and in vitro fertilization cycle in both centres. Nevertheless, pregnancy rate between Yasmin Clinic and Kedoya Clinic were statistically different, suggesting another factors that influence success rate of in vitro fertilization. This research showed that most patients seek medical attention at the age of 35, after 7 years of infertility, suggesting awareness of infertility problem is still low.

Keywords: infertility, in-vitro fertilization, cost

1. Introduction

According to World Health Organization (WHO), infertility is a reproduction system disease characterized by failure to achieve a clinical pregnancy after 12 month or more of regular unprotected sexual intercourse. Primary infertility for women is defined by inability to ever bear a child, which can be caused by inability to become pregnant or inability to carry a pregnancy to a live birth. Secondary infertility is when a woman

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is unable to bear a child after a previous pregnancy or a previous ability to carry a pregnancy to a live birth [1].

In 2010, 1,9% of 20-44 years old women who seek for a child were unable to attain pregnancy or have a live birth (primary infertility), and 10,5% child-seeking women were unable to have an additional child (secondary infertility). Worldwide, the estimated number of 48,5 million couples are unable to have a child, 21,5 million of which are having primary infertility and the rest are secondary infertility. In the United States, about 6% of married women in reproductive age (15-44 years old) are unable to conceive after a year of regular unprotected sex, and 12% of women 15-44 years old regardless of marital status have difficulty to get pregnant or carry a live birth [2,3].

In Indonesia, according to *Riset Kesehatan Dasar* (RISKESDAS) 2010, about 5,5-5,9% of married women aged more than 40 years old had not had a living child (primary infertility). This number was even higher in married women aged 20-39, this number varied with the highest was 21,9% [4].

Infertility is not only women's problems; it can be caused by the male factor. Male factor is responsible in 40% of couples and the female factor is responsible in 40% of couples. The remainder of infertility cases are either male and female factors combined or unexplained infertility, meaning a clear cause is not identified [5].

Aging is the most common risk factors in infertility, especially among females. Sexually transmitted diseases such as chlamydia and gonorrhea infection is associated with pelvic inflammatory disease, which is a frequent cause for tubal factor infertility. Overweight and obesity in women also associated with ovulatory dysfunction. The most common male factor for infertility is idiopathic, but trauma, infection, varicocele, and exposure to environmental toxin may affect semen production. Smoking in both men and women is also a factor that impairs fertility [5].

With the development of technology, more advanced treatments for infertility are now available. Infertility can be treated by medication, intrauterine insemination or artificial insemination, and assisted reproductive therapy, including in-vitro fertilization. IVF success rate in United States were quite high, 40% in women younger than 35 years of age, 31% in women aged 35-37 years, 22% in women aged 38-40 years, 12% in women aged 41-42 years, 4% in 43-44 years and 2% in women aged 44 years and older. This number varies from clinic to clinic and also depends on infertility diagnoses [3].

Despite the availability of infertility treatments, in Indonesia, in-vitro fertilization technique is still not widely used. Based on Indonesia Association for In-Vitro Fertilization (Perfitri) data, in 2010, there were only 2000 cases of in-vitro fertilization in Indonesia, which was only one third of Vietnam's and half of Thailand's. One of the reasons behind this was the service's fee is high, so that low and middle-income family cannot afford it. However, the service's fee varies between clinics. Therefore, new couples with limited budget who have longed for a child could choose cheaper, more affordable clinics if they choose to go for in-vitro fertilization.

We conducted an observational study in two in-vitro fertilization centers in Jakarta. Yasmin Clinic, under Cipto Mangunkusumo General Hospital, offers in-vitro fertilization service with high cost. The other center was Kedoya Clinic, which also offers in-vitro

fertilization therapy for lower price. One cycle of in-vitro fertilization in Yasmin Clinic costs 50-70 million rupiahs, depends on initial assessment result and drug used, while in Kedoya Clinic, a cycle of in-vitro fertilization costs 35 million rupiahs. Our primary objective was to evaluate the characteristics of patients and their pregnancy rate following in vitro fertilization in infertile couples who underwent in-vitro fertilization program in these clinics.

2. Methods

2.1. Population and Sample

This is an observational analytic study using retrospective cohort approach. Target population of this research was all infertile couples who underwent in-vitro fertilization treatment. The accessible population was couples who did in-vitro fertilization in Yasmin Clinic (RSCM) and Kedoya Clinic. We used consecutive sampling method to choose the sample used in this study.

2.2. Data Collection

Data from medical record of patients in those two in-vitro fertilization center in Jakarta were collected. All medical records which fulfilled inclusion and exclusion criteria were included in this study. Inclusion criteria used in this research are all infertile couples who opted in-vitro fertilization treatment in Yasmin Clinic or Kedoya Clinic, and who completed the intervention. Data excluded from this study are the ones with incomplete or loss of medical record data.

All medical records from Yasmin Clinic and Kedoya Clinic between October 2014 to September 2015 were collected. From all the collected medical records, 510 met the inclusion and exclusion criteria, 405 of which was from Yasmin Clinic and 105 was from Kedoya Clinic. Indicators used to compare patient's characteristics were maternal age, maternal weight, period of infertility, and paternal age. In-vitro fertilization cycle characteristics were compared using total of in-vitro fertilization trials, number of oocytes, number of inseminated oocytes, embryo produced, fertility rate, cleavage, and cleavage rate. Pregnancy rate in both clinics was assessed with biochemical test after in-vitro fertilization trials.

2.3. Data Analysis

Obtained data then analyzed using Statistical Package for the Social Sciences (SPSS) for Windows version 11.0 software. Statistical analysis used in this paper was Mann-Whitney to compare the characteristics of patients and characteristics of in-vitro fertilization cycle between the centers. Chi-square was used to compare the pregnancy rate between the two clinics based on the biochemical test.

	Yasmin		Kedoya		p
	n	Median (min-max)	n	Median (min-max)	
Maternal age (years)	405	35,0 (21,0-48,0)	104	34,0 (21,0-42,0)	0,032
Maternal weight (kg)	152	59,0 (36,5-87,0)	58	59,8 (43,0-100,0)	0,326
Infertility duration (years)	148	7,0 (1,0-20,0)	58	7,0 (1,0-15,0)	0,227
Paternal age (years)	44	36,0 (28,0-52,0)	102	39,0 (28,0-59,0)	0,017

TABLE 1: Demographic characteristics of patients.

	Yasmin		Kedoya		p
	n	Median (min-max)	n	Median (min-max)	
Number of IVF trials	137	1,0 (1,0-4,0)	68	1,0 (1,0-2,0)	0,004
Number of oocytes	450	9,0 (1,0-1.500.000,0)	105	9,0 (0,0-36,0)	0,114
Inseminated oocytes	450	7,5 (1,0-37,0)	105	8,0 (1,0-33,0)	0,344
Embryo produced	450	5,0 (1,0-26,0)	105	5,0 (1,0-26,0)	0,054
Fertility rate (%)	450	66,67 (14,29-100,00)	105	73,05 (22,22-100,00)	0,014
Cleavage	450	5,0 (1,0-26,0)	105	5,0 (0,0-24,0)	0,098
Cleavage rate (%)	450	100,0 (10,0-100,0)	105	100,0 (60,0-100,0)	<0,001

TABLE 2: In-vitro fertilization cycle characteristics.

3. Result

From October 2014 to September 2015, there were 510 complete medical record data which contained biochemical pregnancy. These medical records, 405 data from patients in Yasmin Clinic and 105 data from patients in Kedoya Clinic, were included in the analysis. Data from both clinics showed that there were neither clinical nor statistical difference in maternal weight and infertility duration (Table 1). Even though there were significant statistical difference in paternal and maternal age, there were no clinical difference based on the median. No statistical difference may be caused by large sample size. Overall, there were no significant difference between patients' characteristics in Yasmin Clinic and Kedoya Clinic.

Table 2 showed that there were no significant differences in almost all variables of in-vitro fertilization cycle characteristics. Although total of in-vitro fertilization trials and cleavage rate were statistically significant, they were not clinically significant. Mean difference between number of in-vitro fertilization trials was only $0,22 \pm 0,058$, and only $1,11 \pm 0,840\%$ for cleavage rate. Thus, there were also no significant differences between the two clinics in in-vitro fertilization cycle characteristics.

While patients' characteristics in both clinics were similar, the pregnancy rate in Yasmin Clinic was significantly higher than in Kedoya Clinic, accounted for 64,8% in Yasmin Clinic and 45,7% in Kedoya Clinic (OR = 2,185; 95%CI 1,420-3,361; p=0,001).

		Biochemical Pregnancy				p
		Yes		No		
		N	%	n	%	
Location	Yasmin	287	64,8	156	35,2	0,001
	Kedoya	48	45,7	57	54,3	
Total		335	61,1	213	38,9	

TABLE 3: Pregnancy rate of Yasmin Clinic and Kedoya Clinic based on biochemical pregnancy.

4. Discussion

Our research shows that there are no characteristic differences in patients of Yasmin Clinic and Kedoya Clinic, in spite of price difference. We expected to see younger patients in Kedoya Clinic as it is cheaper than Yasmin Clinic, but the median showed no age difference in patients of both centers. The reason might be the stigma in community that in-vitro fertilization technique is expensive. Another reason might be that although Kedoya Clinic is cheaper than Yasmin Clinic, the fee is still unaffordable for low- and middle-income family in Indonesia.

Median value of maternal age in both clinics is 34-35 years. Pregnancy in women aged 35 years and older fall into advanced maternal age (AMA) category. Advanced maternal age increases the failure of IVF treatment, risk of maternal near miss, maternal death and severe maternal outcome compared to pregnancy in women aged 20-34 years. It also increases the risk of preterm birth, low birthweight, NICU admission, and birth asphyxia [6]. This finding suggests that the awareness of advanced maternal age is still low, thus selling infertility problem short. Further research may be needed to evaluate maternal educational level towards infertility and advanced maternal age, and education should be given to all young couples about infertility. Young couples should be informed to seek medical attention if they cannot get pregnant after 6 months of regular unprotected intercourse in their early 30s to have a safer, healthier pregnancy.

Despite patients' similar characteristics, pregnancy rate in Yasmin Clinic is significantly higher than in Kedoya Clinic. The pregnancy rate difference implies that there are another factors which are not included in this study, may be patients' compliance, or technical issues such as different in-vitro fertilization technique, different medium used to transfer the embryo, quality of reagents, or technician's skill. It seems that higher cost also increases the effectivity and quality of in-vitro fertilization program, yet another study should be conducted to evaluate these factors.

5. Conclusion

There are no differences in patients' characteristics in Yasmin Clinic (high cost) and Kedoya Clinic (lower cost), which may be caused by the price is still too high for the society. However, the pregnancy rate is significantly higher in Yasmin Clinic and Kedoya Clinic, suggesting high cost increases the quality of treatment.

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References

- [1] World Health Organization. Infertility definition and terminology [Internet]. No date [cited 2016 Mar 4]. Available from: <http://www.who.int/reproductivehealth/topics/infertility/definitions/en/>.
- [2] M. N. Mascarenhas, S. R. Flaxman, T. Boerma, S. Vanderpoel, and G. A. Stevens, National, Regional, and Global Trends in Infertility Prevalence Since 1990: A Systematic Analysis of 277 Health Surveys, *PLoS Medicine*, **9**, no. 12, Article ID e1001356, (2012).
- [3] Centers for Disease Control and Prevention. Infertility FAQs [Internet]. 2015 Sept 16 [cited 2016 Mar 4]. Available from: <http://www.cdc.gov/reproductivehealth/infertility/>.
- [4] Indonesian Republic. Riset kesehatan dasar 2010. Jakarta: Ministry of Health; 2010.
- [5] F. F. Ferri, Ferris clinical advisor, 701-702e, Elsevier, California, 2016.
- [6] M. Laopaiboon, P. Lumbiganon, N. Intarut, R. Mori, T. Ganchimeg, J. P. Vogel, J. P. Souza, A. M. Gülmezoglu, and , Advanced maternal age and pregnancy outcomes: a multicountry assessment., *BJOG: an international journal of obstetrics and gynaecology*, **121**, 49-56, (2014).