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IS BODY MASS INDEX (BMI) AN IMPORTANT PREDICTOR OF ART TREATMENT OUTCOMES? A MALAYSIAN PUBLIC FERTILITY CLINIC EXPERIENCE



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BACKGROUND

Obesity rates are increasing worldwide^[1]. Obesity may place pregnant women at the various obstetrical risks such as gestational diabetes, hypertension and operative delivery^[2,3]. Body mass index (BMI) influences fertility treatment success rate too. This study aimed to investigate influence of BMI on the reproductive outcome of women who had undergone In vitro fertilization (IVF)/Intracytoplasmic sperm injection (ICSI).

METHODS

This retrospective analysis included 108 cycles of women aged younger than 42 years old, undergoing IVF/ICSI and embryos cryopreservation followed by Frozen Embryo Transfer (FET) as part of Segmentation IVF/ICSI treatment commonly practiced at our centre. The FET treatment cycles were divided into four(4) groups according to their BMI: Group 1 Underweight BMI <18.5kg/m², Group 2 Normal 18.5-24.9kg/m², Group 3 Overweight 25-29.9kg/m² and Group 4 Obese ≥30kg/m². Ongoing pregnancy rate (OPR) was measured as primary, whereas biochemical pregnancy rate (bPR), implantation rates (IR) and clinical pregnancy rate (CPR) as secondary end points. Age, types and causes of infertility were analysed. Total dosage of follicle stimulation hormone (FSH) used, number of top quality embryos and number of embryos transferred were recorded. Chi-square analyses were used to determine if BMI has statistically significant difference.

RESULTS

Background characteristics including age, infertility types and causes in all treatment cycles were similar across the groups except for a significant differences in mean total dose of FSH used (Table 1 & Figure 1). OPR appeared to be highest in Group 1 at 25% and lowest in Group 3 at 14% (Table 2). However it was not statistically significant across all BMI groups. Secondary outcomes such as bPR, IR and CPR in all groups analysed were also not statistically significant (Table 2).

Table 1: Demographic characteristics of women of 108 cycles that underwent IVF/ICSI and embryos cryopreservation followed by FET

Variables	BMI (kg/m ²)			
	<18.5	18.5- 24.9	25.0- 29.9	≥30.0
Total patients	4 (3.7%)	56 (51.9%)	43 (39.8%)	5 (4.6%)
Age (years) ^{ns}	34.0	31.4	34.5	38.0
Types of infertility ^{ns}				
Primary	2	46	32	4
Secondary	2	10	11	1
Infertility factor				
Male	1	8	4	2
Female	1	35	27	3
Both	0	2	4	0
Unexplained	2	11	8	0
Dose of FSH used (iu) *	2218.8ab	1774.8a	2316.3b	2355.0b
Number of top quality embryos ^{ns}	0.75	0.95	0.98	1.00
Number of embryo transferred ^{ns}	2.0	1.7	1.7	1.6

* Indicate significance at the 0.05 probability level (*p-value*) and ns denotes non significance

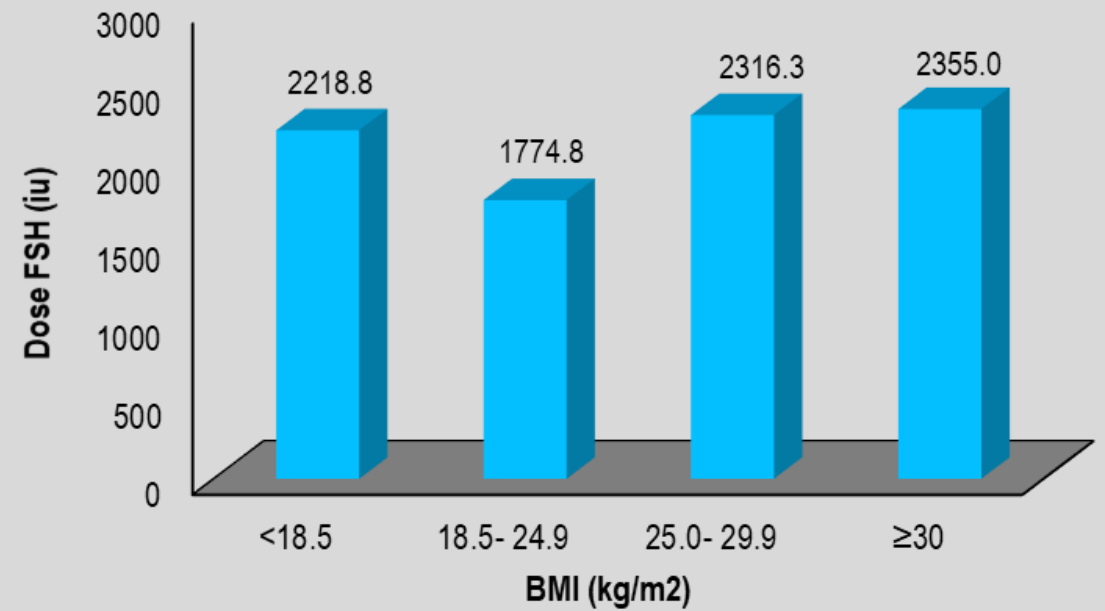


Figure 1: Effect of BMI on dosage of FSH used (iu)

Table 2: Pregnancy outcomes in the four BMI groups

Variables	BMI (kg/m ²)			
	<18.5	18.5- 24.9	25.0- 29.9	≥30.0
OPR (%) ^{ns}	25.0	21.4	14.0	20.0
bPR (%) ^{ns}	50.0	35.7	23.3	20.0
IR (%) ^{ns}	12.5	22.1	13.3	14.3
CPR (%) ^{ns}	25.0	32.1	23.3	20.0

ns denotes non significance

CONCLUSION

Overweight patients were found to have reduced OPR when compared to obese patients. The normal weight patients had similar OPR when compared to obese patients. A larger, well-designed prospective study is needed to further clarify role of BMI in pregnancy outcome of women undergoing ART treatment. This small study showed no statistically significant effect of BMI on embryo quality and subsequently ongoing pregnancy outcome. However, a careful consideration needs to be weighed in view of known obstetrical and maternal complications related to higher BMI.

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