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The Relationship Generated between the Results of Bariatric Surgery and Infertility

Dr. Ahmed Fakhri Omar[1], Dr. Tareq Jawad kadem Al-Rubayee[2], and Dr. Anwar Abbood Alwan[3]

[1]M.B.Ch.B., C.A.B.S., M.R.C.S. Ireland (General Surgeon), Ministry of Health of Kurdistan, Erbil Directory of Health, Roj Halat Emergency Hospital

[2]M.B.Ch.B., M.R.C.S., Ireland, Diploma General Surgery, Ministry of Higher Education and Scientific Research, AL-Rasheed University College, Department of Pharmacy, Baghdad, Iraq

[3]M.B.Ch.B., D.O.G., (Obstetrics and Gynecology), Ministry of Health, Baghdad Medical office Al-Karkh, Al-Tarmyia General Hospital, Baghdad, Iraq

Abstract: Background: - Globally, the percentage for overweight or obese women rose to 54% in 2014. Numerous writers have shown how obesity affects fertility. **Aim**: This paper was objective to study the relationship generated between the results of bariatric surgery and infertility. **Patients and methods:** This paper was interested as a cross-sectional study to study the relationship generated between the results of bariatric surgery and infertility into clinical health outcomes were collected through different hospitals in Iraq from 16th May 2021 to 25th Jun 2022. This study was also dealt to detect the effect of obesity on women. This study was determined the data through the distribution of patients into two groups. Where the first group was presented as a patient group that explains non pregnancy women with 45 cases which have metabolically abnormal obese, while the second group includes pregnancy women which have metabolically normal obese with 45 cases, this paper was analysed and designed the methodology of obesity and infertility outcomes by SPSS program. **Results and Discussion:** In comparison to women who were not able to get pregnant, pregnant women were much more likely to have normal triglyceride levels, a reduced BMI, and adequate vitamin D status, highlighting the significance of these metabolic parameters for fertility. Our findings imply that, in order to increase the likelihood of conception, baseline triglyceride levels must be monitored, and women suffering from hypertriglyceridemia should be urged to restore their lipid profiles before getting pregnant. **Conclusions**: In obese women, metabolic abnormalities are common. Therefore the metabolic worldwide strategy provides a useful tool for finding these abnormalities. Significant as well as independent predictors in pregnancy include having enough vitamin D levels, a reduced BMI, and baseline acceptable triglyceride levels.

Keywords: Infertility, Obesity; metabolically abnormal obese; and metabolically normal obese.

INTRODUCTION

In global, the percentage for overweight or obese women rose to 54% in 2014. Numerous writers have shown how obesity affects fertility. Each unit rises in Body Mass Index (BMI) is related to a 5% reduction in ovulatory performance in obese women [Statistics Canada, 2017; Bellver, J. *et al*., 2010]. Additionally, higher BMI categories are linked to decreased pregnancy and live birth rates as well as a higher risk of obstetrical problems such as gestational diabetes, hypertension, aided delivery, caesarean section, as well as newborn morbidity. [Luke, B. *et al*., 2011; Cedergren, M.I, 2004]

Despite advancements in assisted reproductive technologies (ARTs), obesity continues to be a problem in fertility clinics. Obese women who undergo fertility treatments sometimes have poor results. Due to poor oocyte quality, diminished ovarian response, and unfavorable endometrial alterations, ART is less successful in obese women. Even with ART, comparing to women with a BMI, overweight women continue to have a lower pregnancy rate with a greater loss rate. [www.stat can.gc.ca, 2017-Sobaleva, S. *et al*., 2011]

Changes in fashion are linked to enhanced pregnancy rates, higher spontaneous ovulation, and menstrual cycle management. Weight loss has a significant effect on the outcomes of reproductive therapies, especially through enhancing oocyte quality, as demonstrated by Chavarro, *et al*. This study lacked the statistical power to draw any firm conclusions about the effects on weight loss alone upon pregnant obese women's pregnancies. This shows, as observed in previous research that improving these patients' pregnancy rates requires addressing a variety of factors in addition to maternal weight. [Metwally, M. *et al*., 2008-Chavarro, J.E. *et al*., 2012]

Type 2 diabetes, hypertension, dyslipidaemia, as well as metabolic syndrome are all connected with maternal obesity and its detrimental metabolic consequences. Prior to receiving ART, these comorbidities must be checked since, if untreated, they may have an impact on a woman's capacity to reproduce and raise the likelihood of unfavorable pregnancy outcomes. [Clark, A.M. *et al*., 1998-American College of Obstetricians and Gynecologists, 2013]

***Corresponding Author:** Dr. Ahmed Fakhri Omar

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Furthermore, it has been shown that a lack of vitamin D is linked to obesity. It has been proposed that vitamin D deficiency affects a woman's capacity for reproduction and the success of IVF. Further study is required since it is still unclear whether vitamin D administration is linked to a greater pregnancy rate following IVF [Al Awlaqi, A. *et al*., 2016-Paffoni, A. *et al*., 2014]. This paper was objective to study the relationship generated between the results of bariatric surgery and infertility.

PATIENTS AND METHODS

This paper was interested as a cross-sectional study to study the relationship generated between the results of bariatric surgery and infertility into clinical health outcomes were collected through different hospitals in Iraq from 16th May 2021 to 25th Jun 2022. This study was also dealt to detect the effect of obesity on women. This study was determined the data through the distribution of patients into two groups. Where the first group was presented as a patient group that explains non pregnancy women with 45 cases which have metabolically abnormal obese, while the second group includes pregnancy women which have metabolically normal obese with 45 cases, this paper was analysed and designed the methodology of obesity and infertility outcomes by SPSS program.

To follow up of the methodology, this paper was shown Clinical health outcomes of infertility patients based on ages with (25-40) years which can be seen in Table 1. To progress of results, our outcomes were defined with indications of Infertility etiology with clinical characteristics, which include Anatomic (tubal or uterine), Low ovarian reserve, and PCOS. Where these results can be found in Table 2. Moreover, the health outcomes were determined with dichotomous variables in comparison between patients and controls where these factors include Type 2 diabetes, Smoking, Hypertension, Hypertriglyceridemia, and Normal 25 (OH)-vitamin D level. These factors were got on in Figure 1.

Furthermore, this paper was distributed of infertility patients according to BMI with determine into <30 and >30. These results can be seen in Table 3. To compare the patients with control results, this paper was found a determination of obesity rate into comparison between patients and controls that have Initial body weight, Final body weight, and Weight loss where these outcomes can be expression in Figure 2. To further of outcomes, this paper was detecting of health baseline outcomes of infertility patients into a number of prior live births which have >1 and 0. These parameters were determined in Table 4.

In addition of the results, this paper was determined of metabolically obese into a comparison between patients and control that include Metabolically normal obese, metabolically abnormal obese, and Miscarriages. These outcomes can be shown in Figure 3. As well as this study was also evaluating with Indicator of pregnancy rate in relation with time into a comparison between patients and control according to metabolically abnormal obese as well as an Indicator of pregnancy rate in relation with time into a comparison between patients and control according to metabolically normal obese in correlation time with pregnancy rate where these indicators were found in Figure 4 and Figure 5.

RESULTS

Table 1: Clinical health outcomes of infertility patients based on ages

N	**V**	45
	Mi	0
M		32.1333
SEM		.68283
Me		32.0000
SD		4.58059
Var		20.982
Sk		.128
StEs		.354
Ra		15.00
Min		25.00
Max		40.00
S		1446.00

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Table 2: Indications of Infertility etiology with clinical characteristics

		Freq, 45	P (%)	VP (%)	CP (%)
V	**Anatomic (tubal or uterine)**	8	17.8	17.8	17.8
	Low ovarian reserve	16	35.6	35.6	53.3
	PCOS	21	46.7	46.7	100.0
	T	45	100.0	100.0	

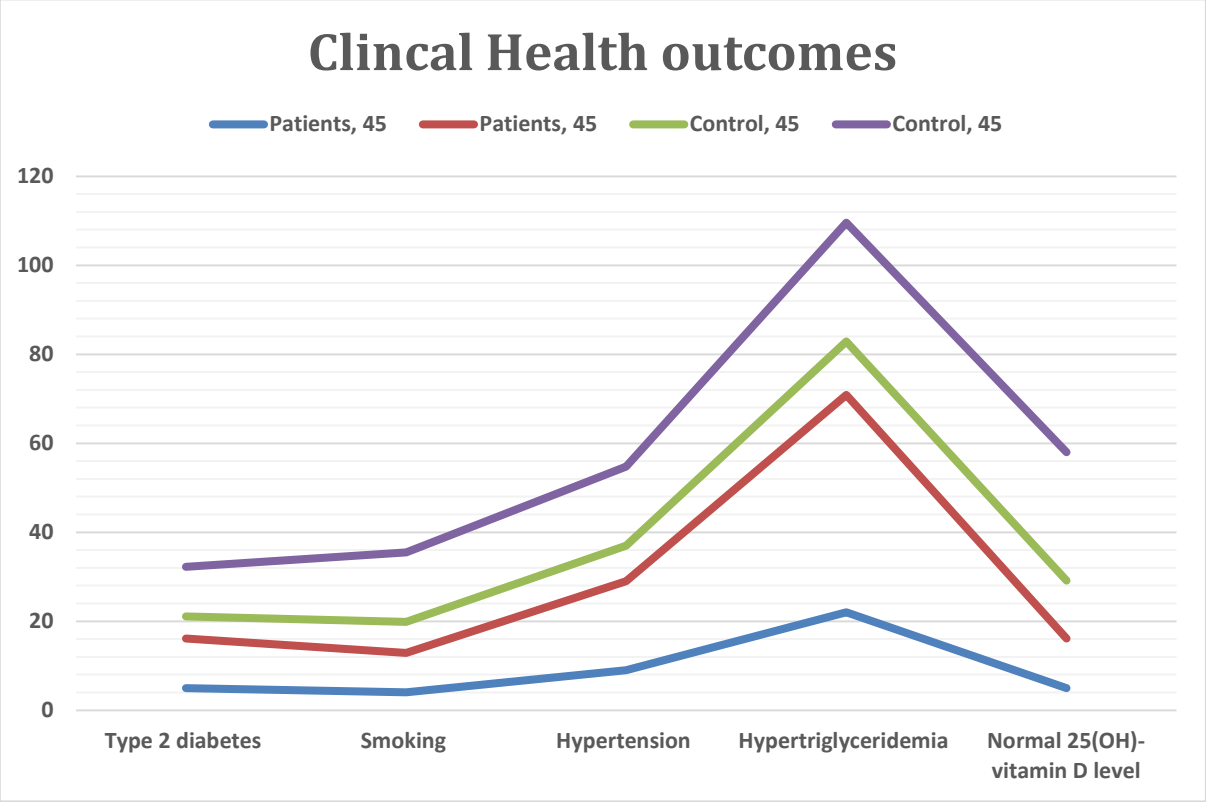

Figure 1: Health outcomes of Dichotomous variables in comparison between patients and controls

Table 3: Distributions of infertility patients according to BMI

		Freq, 45	**P (%)**	**VP (%)**	**CP (%)**
V	***<30***	8	17.8	17.8	17.8
	>30	37	82.2	82.2	100.0
	T	45	100.0	100.0	

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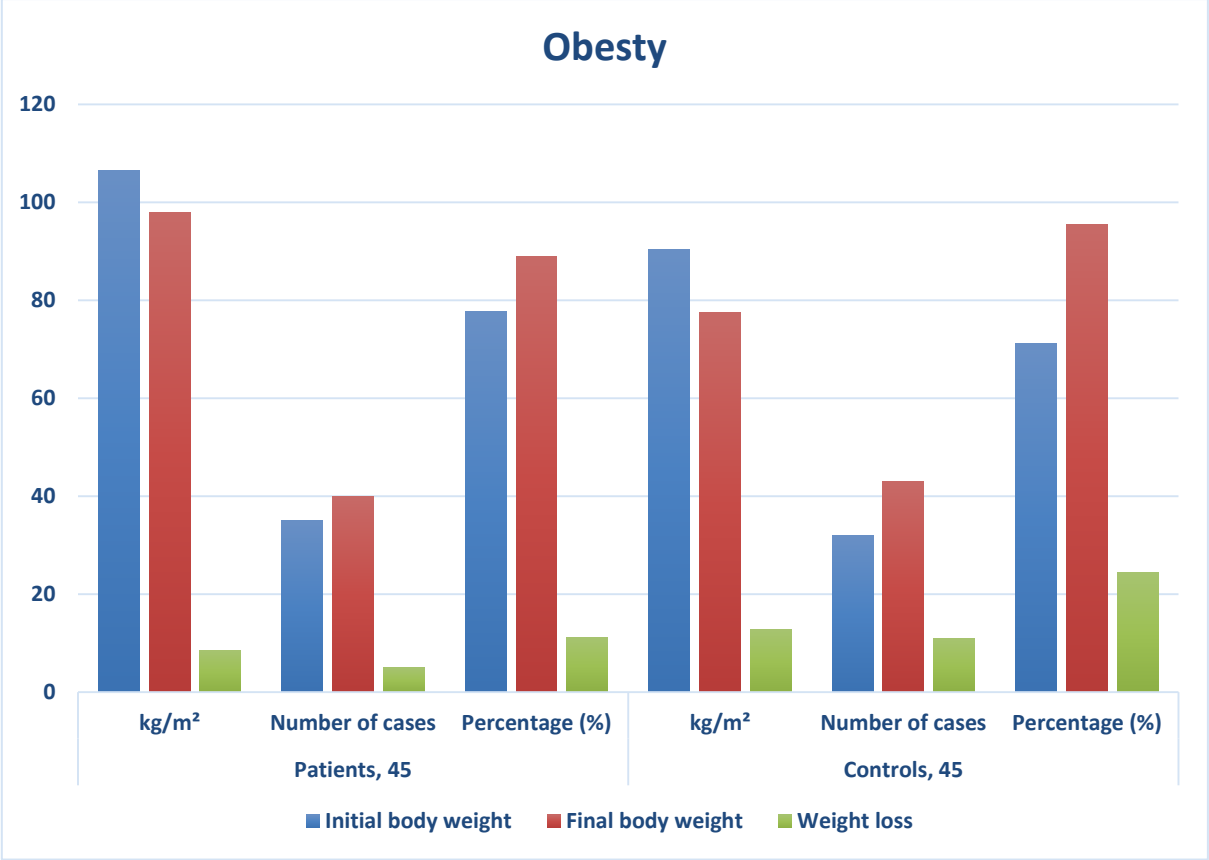

Figure 2: Determination of obesity rate into a comparison between patients and controls

Table 4: Detection of health baseline outcomes of infertility patients into a number of prior live births

		Freq, 45	P (%)	VP (%)	CP (%)
V	***>1***	23	51.1	51.1	51.1
	0	22	48.9	48.9	100.0
	T	45	100.0	100.0	

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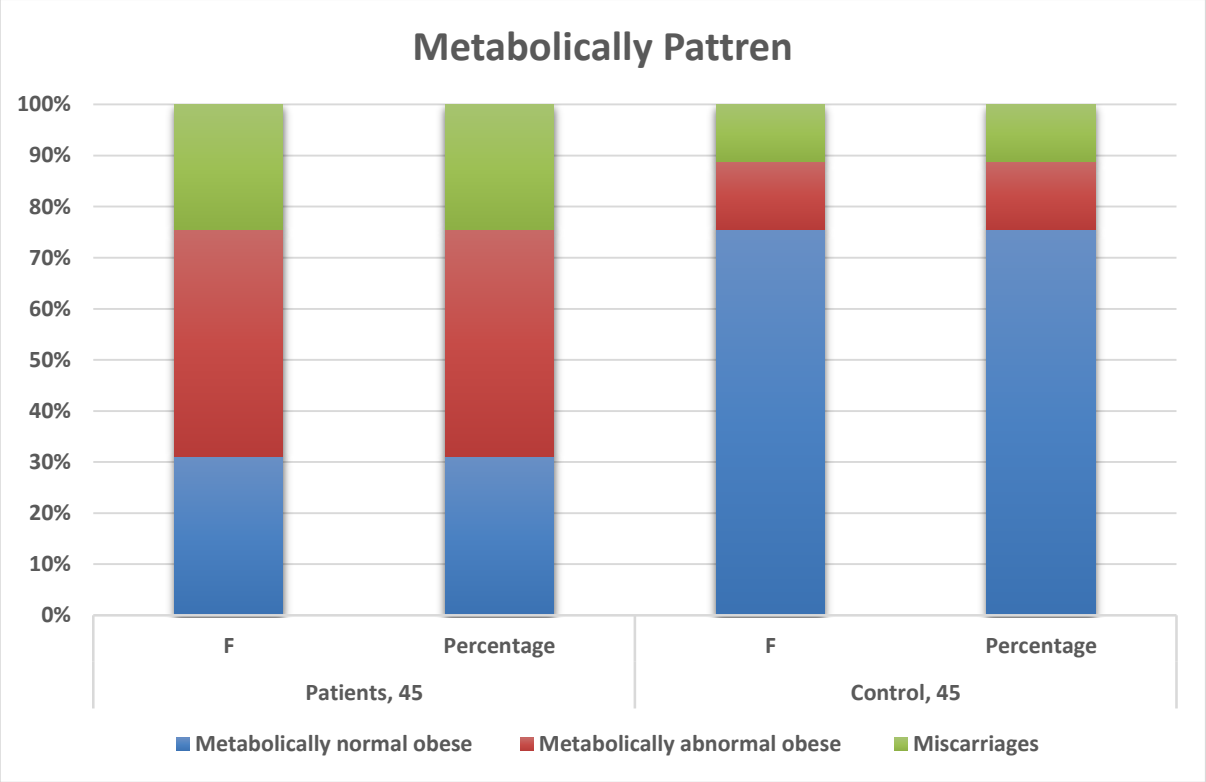

Figure 3: Determination of metabolically obese into a comparison between patients and control

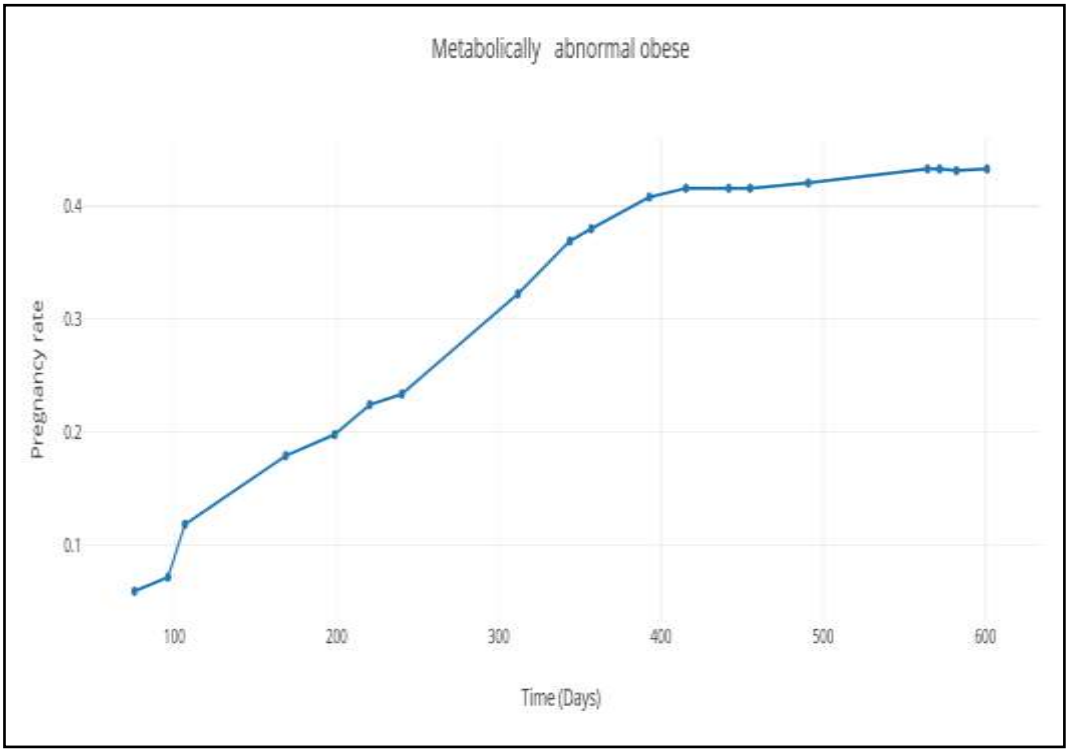

Figure 4: Indicator of pregnancy rate in relation with time into a comparison between patients and control according to metabolically abnormal obese

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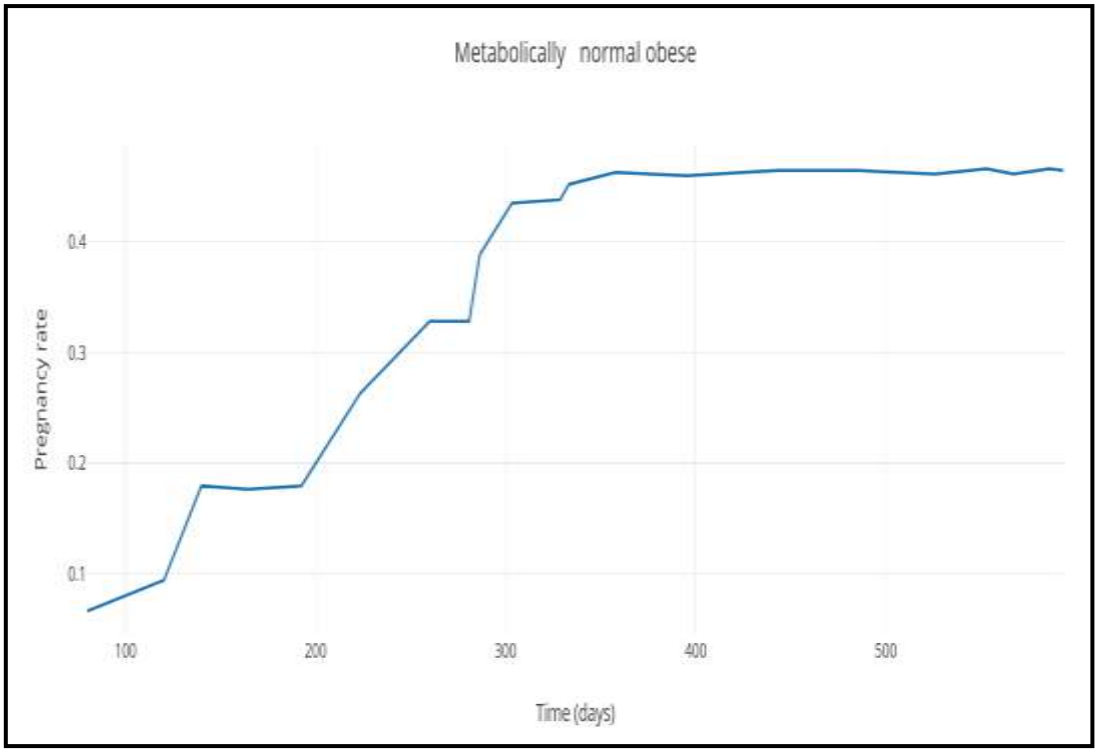

Figure 5: Indicator of pregnancy rate in relation with time into comparison between patients and control according to metabolically normal obese

DISCUSSION

In comparison to women who were not able to get pregnant, pregnant women were much more likely to have normal triglyceride levels, a reduced BMI, and adequate vitamin D status, highlighting the significance of these metabolic parameters for fertility. There is still no solid evidence linking weight loss to reproductive results. According to Clark, *et al*., [Aflatoonian, A. *et al*., 2014], obese infertile women who completed a lifestyle intervention course as well as reduced 10% of their baseline weight had a higher pregnancy rate (77%) as well as a birth rate (67%) than those who lost only 1% of their body weight. More recently, Kort, *et al*., [Lv, S.S. *et al*., 2016] found that obese infertile women (BMI 25 kg/m2) who lost weight had greater conception rates (88% vs. 54%) as well as live birth rates (71% compared. to 37%) than those who did not.

Weight loss can boost metabolic functions, particularly triglyceride levels, which may help explain why some studies have shown a favorable correlation between weight loss with fertility. Hypertriglyceridemia has been shown to be associated with insulin resistance and increased levels of inflammatory cytokines, two factors that have been theorized to affect implantation and conception. Our findings imply that to increase the likelihood of conception, baseline triglyceride levels must be monitored, and women suffering from hypertriglyceridemia should be urged to restore their lipid profiles before getting pregnant. Obese women who visited our clinic and had adequate vitamin D levels had a 2.8-fold higher chance of getting pregnant than the patients' group. [Institude of medicine, 2005]

These results confirm that clinical pregnancy rates were greater in women with higher 25 (OH)-vitamin D blood levels than in those with vitamin D insufficiency. One of the suggested theories for vitamin D's influence on fertility is that it acts as a socioeconomic marker (diet, obesity, sun exposure, sedentary lifestyle) [Canadian Society of exercise physiology, 2011], is involved in implantation, gonadal steroidogenesis, and raises anti-mullerian hormone levels.

CONCLUSIONS

In obese women, metabolic abnormalities are common. Therefore the metabolic worldwide strategy provides a useful tool for finding these abnormalities. Significant as well as independent predictors in pregnancy include having enough vitamin D levels, a reduced BMI, and baseline acceptable triglyceride levels. Based on the results, this study were found that the obesity factor and age gets a big impact on women. Where our results find infertility is effectively caused by problems with metabolically obese, which the controls group

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have get normal metabolically obese, while the patients group get abnormal metabolically obese.

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