



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HANAA ALY

**Effect of Adding Vitamin D Supplementation to Clomiphene
Citrate for Induction of Ovulation in Overweight Women
with Polycystic Ovary Syndrome:
A Double Blinded RCT**

Thesis

**Submitted for partial fulfillment of master's degree
in Obstetrics and Gynecology**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سَبِّحْكَ لَا إِلَهَ إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Contents

<i>Subject</i>	<i>Page No.</i>
List of Abbreviations.....	i
List of Tables.....	iii
List of Figures	v
Introduction	1
Aim of the Work.....	3
Review of Literature	
Polycystic Ovary Syndrome.....	4
Induction of ovulation	16
Role of vitamin D in Infertility	24
Patients and Method	30
Results.....	41
Discussion	60
Summary and Conclusion	67
Recommendations	71
References	72
Arabic Summary	—

List of Abbreviations

Abbr.	Full-term
AFC	Antral follicular count
AIS	Aromatase inhibitors
AMH	Anti müllerian hormone
ASRM	American society for reproductive medicine
BMI	Body mass index
CC	Clomiphene citrate
CHD	Coronary heart disease
COCs	Combined Oral Contraceptives
CVD	Cardio vascular disease
DHEAS	Dehydro epiandrosterone sulphate
DM	Diabetes Mellitus
E2	Estradiol
ESHRE	European society of human reproduction and embryology
ET	Endometrial thickness
FAI	Free androgen index
FBG	Fasting blood glucose
FSH	Follicle-stimulating hormone
FT	Free testosterone
GnRH	Gonadotropin-releasing hormone
HCG	Human chorionic gonadotropin
ICSI	Intra cytoplasmic sperm injection

IR.....	: Insulin resistance
IVF	: In vitro fertilization
LH	: Luetinizing hormone
OGTT	: Oral glucose tolerance test
OHSS	: Ovarian hyper stimulation syndrome
PCOM.....	: Polycystic ovary morphology
PCOS	: Polycystic ovary syndrome
POI.....	: Primary ovarian insufficiency
PPBG	: Post prandial blood glucose
PRL	: Prolactin
SD	: Standard deviation
SERMS	: Selective estrogen receptors modulators
SHBG	: Sex hormone-binding globulin
TSH.....	: Thyroid stimulating hormone
TT.....	: Total testosterone
TVUS	: Trans vaginal ultrasound
VD	: Vitamin D
VDRs.....	: Vitamin D receptors
WC.....	: Waist circumference
WHO.....	: World Health Organization

List of Tables

Table No.	Title	Page No.
Table (1):	Computer-generated random number list	32
Table (2):	Comparison between both groups regarding baseline characteristics and demographic data.	43
Table (3):	Obstetric and surgical history in both groups.....	44
Table (4):	PCO phenotype in both groups	45
Table (5):	Antral follicular count (AFC) and results of biochemical work-up in both groups	46
Table (6):	Main outcome measures in both groups	47
Table (7):	Relative risk and number needed to treat for main outcome measures in both groups.....	49
Table (8):	Follicular sizes, preovulatory and midluteal endometrial thickness in both groups.....	54
Table (9):	Multivariable binary logistic regression analysis for the relation between vitamin D supplementation and occurrence of ovulation after adjustment for the effect of potential confounders.....	55
Table (10):	Multivariable binary logistic regression analysis for the relation between vitamin D supplementation and occurrence of biochemical pregnancy after adjustment for the effect of potential confounders	56

Table (11):	Multivariable binary logistic regression analysis for the relation between vitamin D supplementation and occurrence of clinical pregnancy after adjustement for the effect of potential confounders	57
Table (12):	Incidence of adverse outcomes in both groups.....	58

List of Figures

Figure No.	Title	Page No.
Figure (1):	Participants flow through the study	42
Figure (2):	Main outcome measures in both study groups.....	48
Figure (3):	Kaplan-Meier (K-M) curves for the time to ovulation in either groups.	51
Figure (4):	Kaplan-Meier (K-M) curves for the time to biochemical pregnancy in either groups.....	52
Figure (5):	Kaplan-Meier (K-M) curves for the time to clinical pregnancy in either groups.....	53
Figure (6):	Incidence of adverse outcomes in both groups.....	59

Introduction

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women, having wide range of clinical manifestations. These women may present with reproductive, dermatological, metabolic, psychological and neoplastic implications from adolescence to menopause (*Gainder and Sharma, 2019*).

Polycystic ovary syndrome is considered the most common cause of anovulatory infertility; around 90–95% of anovulatory women seeking treatment for infertility have PCOS (*Teede et al., 2010*).

Moreover, PCOS has different long-term effects as metabolic syndrome, type 2 diabetes mellitus (DM), coronary heart disease (CHD), hypertension, infertility, miscarriage, preeclampsia, gestational diabetes and endometrial cancer (*Genazzani et al., 2010*).

Polycystic ovary syndrome is a common cause of ovarian dysfunction that is characterized by chronic anovulation, hyperandrogenism, and/or the presence of polycystic ovary morphology (PCOM) in ultrasound examination (*Dumesic et al., 2015*).

Vitamin D (VD) deficiency has become a modern-day epidemic, being the most common nutritional deficiency worldwide. In the United States at least one third of the

population is VD deficient, with 41.7% of adults between the ages of 20 - 64 being VD deficient, and 63% of infertile women had insufficient VD levels (**Forrest and Stuhldreher, 2011**).

Vitamin D insufficiency is present in 58% to 91% of women with infertility, it is more common in women with elevated body mass index (BMI), PCOS, and those of asian or black ethnicity (**Rudick et al., 2012**).

Women who have PCOS are three times more likely to be severely deficient in VD than those who do not have PCOS; the prevalence of VD deficiency in women with PCOS is about 67 - 85 percent (**Lin and Wu, 2015**).

In obese women, VD is deposited in adipose tissues, making it unavailable for the body to use. As a result, obese people are expected to have low levels of serum VD (**Yildizhan et al., 2009**).

There is an observed decline in androgens level following 3-months supplementation with VD and calcium in overweight women with PCOS. Reduction in total testosterone (TT) by 12% and androstenedione by 17% is comparable in magnitude to the effect described with the metformin use (**Pal et al., 2012**).

Vitamin D and calcium supplementation in addition to metformin therapy in women with PCOS could result in the beneficial effects on menstrual regularity and ovulation (**Rashidi et al., 2009**).

Aim of the Work

The aim of the study was to evaluate the effect of VD supplement on ovulation rate in overweight women with PCOS who underwent induction of ovulation by clomiphene citrate.

Research question:

In overweight women with PCOS who will undergo induction of ovulation by clomiphene citrate can the addition of VD supplement improve the ovulation rate compared to placebo?

Alternative hypothesis:

In overweight women with PCOS who will undergo induction of ovulation by clomiphene citrate the addition of VD supplementat will not improve the ovulation rate compared to placebo.