

Vitamin D Status among Egyptian Pregnant Women with Gestational Diabetes Mellitus

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لسبب انك لا تعلم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدقة الله العظيم

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List of Abbreviations

Abbr.	Full-term
AAP	: American Academy of Pediatrics
ACOG	: American College of Obstetricians and Gynecologists
ADA	: American Diabetes Association.
ADIPS	: Australasian Diabetes in Pregnancy Society
AMPK	: Adenosine monophosphate-activated protein kinase
BIAsp	: Biphasic insulin aspart
BMI	: Body mass index
Ca	: Calcium
CAT	: Choline acetyltransferase
CGMS	: Continuous glucose monitoring system
CI	: Confidence interval
CNS	: Central nervous system
CSIF	: Cytokine synthesis inhibitory factor
DBP	: Vitamin D binding protein
DM	: Diabetes mellitus.
dRTA	: Distal renal tubular acidosis
Enzyme V_{max}	: maximal velocity.
FAD	: Food and drug administration.
FBG	: Fasting blood glucose.
FDA	: Food and Drug Administration
FGF	: Fibroblast growth factor.
GABA	: Gama amino butyric acid.
GDM	: Gestational diabetes mellitus
GDNF	: Glial cell line-derived neurotrophic factor
GSH	: Glutathione

HAPO	: Hyperglycemia and adverse pregnancy outcomes
HbA1c	: Glycosylated hemoglobin
HbAic	: Glycosylated hemoglobin.
HIV	: human immune virus.
HOMA-R	: Homeostasis model assessment for insulin resistance.
IADPSG	: International association of diabetes and pregnancy study group.
IF-γ	: Interferon γ
IGT	: Impaired glucose tolerance
IL	: Interleukin
IOM	: Institute of medicine
IU	: International unit
KDOI	: Kidney dialysis outcome initiative.
Km enzyme	: Michaelis constant
LGA	: Large for gestational age
MAPkinase	: Mitogen-activated protein kinase.
MARRS	: Membrane associated rapid response steroid-binding receptors.
MIG	: Metformin in gestational diabetes
miRNAS	: Micro RNAs
MNT	: Medical nutritional therapy
MPC	: Model predictive control
MPG	: Mean plasma glucose
mRNA	: Messenger RNA
MS	: Multiple sclerosis
ncRNA	: Non coding RNAs
NGF	: Nerve growth factor
NHANES	: National Health and Nutrition Examination Survey
NICE	: National Institute for Health and Care Excellence

NMDA	: N-methyl-D-aspartate
NOS	: Nitric oxide synthase
NPH	: Neutral protamine hagedorn
OGTT	: Oral glucose tolerance test
OHAs	: Oral hypoglycemic agents
OR	: Odd Ratio.
PCOD	: Polycystic ovarian disease
PCOS	: Polycystic ovary syndrome
PGLs	: Plasma glucose levels
PLC	: Phospholipase c.
PTH	: Parathyroid hormone
RCTs	: Randomized controlled trials
RHI	: Regular human insulin.
RNA	: Ribonucleic acid
ROS	: Reactive oxygen species
RR	: Relative risk
SD	: Standard deviation
SHPT	: Secondary hyperparathyroidism
SMBG	: Self-monitoring of blood glucose
SOCE	: Store-operated calcium entry
SPSS	: Statistical Program for Social Science
STIM	: Stromal interaction molecule
TH	: Tyrosine hydroxylase
UL	: Upper intake level.
UVB	: Ultraviolet B radiation
VBP	: Vitamin binding protein
VDR	: Vitamin D receptor
VDRE	: Vitamin D responsive elements

- Vitamin D** : 1- α ,25(OH)₂D
WHO : World Health Organization
1-OHase : 1- α hydroxylase
25-OHase : 25-hydroxylase
7-DHC : 7-dehydrocholesterol.

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ABSTRACT:

Evidence is accumulating for a role of vitamin D in maintaining normal glucose homeostasis. However, studies that prospectively examined circulating concentrations of 25-hydroxyvitamin D (25-[OH] D) in relation to diabetes risk are limited. Our objective is to determine the association between maternal plasma 25-[OH] D concentrations in 26-29 weeks of pregnancy and the risk for gestational diabetes mellitus (GDM).

Our objective to determine the association between maternal 25(OH)D concentration in 26-29wk and the risk of GDM.

Method:case control study was conducted on90 egyptian pregnant womens,60 was GDM,30 was control.

Result:

The data were statistically analysed and it is found that:

- The mean+SD vitamin D levels were 15.93+3.91 in GDM patient and 23.63+5.18 in control women.
- 25(oH)D insufficient in group 1 GDM was 18(30%),and in group 2 control 7(23.3%).
- 25(oH)D deficient in group 1 GDM 42(70%),and in group 2 control 7(32.5%).
- There wasa negative correlation and significant between maternal serum 25(oH)D and weight prepregnancy P value=0.043,BMI P=0.042,HbA1c P=0.005, fasting blood

glucose $P=0.005$, fasting insulin $p=0.013$ and HOMAIR $p=0.026$. and positive correlation and significant with serum calcium $P=0.013$.

Conclusion: there is statistically significant negative correlation between vitamin D level and glycemic control (FBS, HbA1c) fasting insulin and HOMAIR, also there is a high prevalence of vitamin D deficiency and insufficiency in pregnant women.

KEY WORDS:

25(OH)D=25 hydroxy vitamin D, GDM=gestational diabetes mellitus, insulin R=insulin resistance.