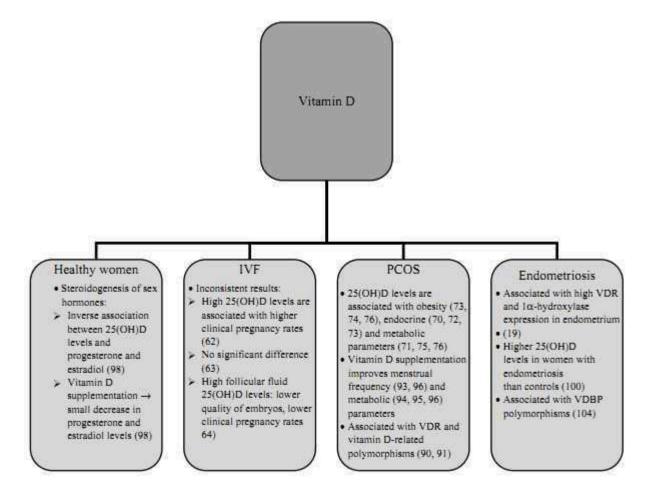
# IVF 4X more successful for white women with lots of vitamin D - many studies

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## 13 VitaminDWiki pages with IVF or IN VITRO FERTILIZATION in title

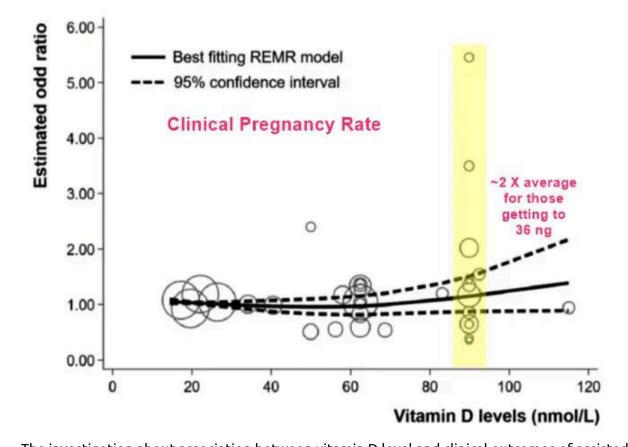
Title	Modified
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In Vitro Fertilization (D5 SET ICSI) 40 percent more successful if high vitamin D – Sept 2014	15 Aug, 2014
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## IVF perhaps 2X average more successful if 36 ng of Vitamin D - May 2024

# Association Between Vitamin D Level and Clinical Outcomes of Assisted Reproductive Treatment: A Systematic Review and Dose-Response Meta-Analysis

Reproductive Endocrinology: Review

Chenhao Xu, Xinqi An, Xiumei Tang, Yunxiao Yang, Qi Deng, Quanling Kong, Ying Hu & Dongzhi Yuan



The investigation about association between vitamin D level and clinical outcomes of assisted reproductive treatment showed various outcomes. This study aimed to review the correlation between vitamin D and outcomes of assisted reproductive treatment. The search was registered on the PROSPERO database (CRD42023458040). PubMed, Embase, Medline, ClinicalTrials.gov, and Cochrane databases were searched up to July 2023. Twenty-three observational studies were selected for meta-analysis. Comparing groups with deficient and 'insufficient' vitamin D level, meta-analysis showed positive correlation between clinical pregnancy rate and vitamin D (OR 0.81, 95%CI: 0.70, 0.95, P = 0.0001). Comparing groups with 'deficient + insufficient' and sufficient vitamin D level, meta-analysis showed positive correlation between vitamin D and clinical pregnancy rate (OR 0.71, 95%CI: 0.55, 0.91, P = 0.006), vitamin D and live birth rate (OR 0.69, 95%CI: 0.54, 0.89, P = 0.003). Subgroup analysis did not show the source of high heterogeneity. No correlation was found in biochemical pregnancy

rate, ongoing pregnancy rate, miscarriage rate and implantation rate. In dose-response meta-analysis, a nonlinear association was found between vitamin D levels and outcomes when levels are below approximately 24 ng/L. The study shows that vitamin D level is associated with clinical pregnancy rate and live birth rate. Low vitamin D level does not influence biochemical pregnancy rate, ongoing pregnancy rate, miscarriage rate and implantation rate. Furthermore, 24 ng/L may be a possible threshold of vitamin D concentration in assisted reproduction therapy.

Download the PDF from VitaminDWiki

## 43% of US insurances do not pay for any part of IVF - Sept 2023

#### **Mercer.com**

"Their data suggest that approximately 38% of patients who freeze eggs return to use them two to five years later."

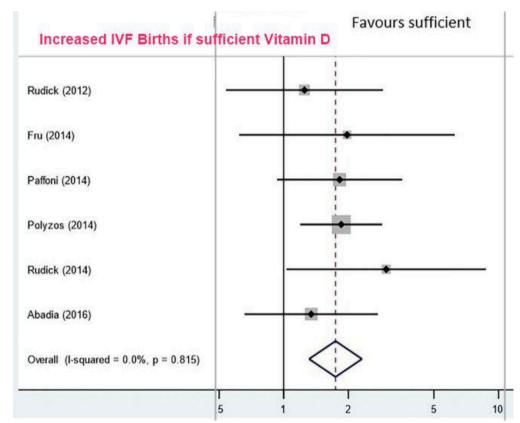
VitaminDWiki suspects more IVF success if supplement both the man and the woman with Vitamin D months before the egg is made and, perhaps years later, for the mother months before the egg is transplanted

### IVF women with good vitamin D were 1.7 X more likely to have a live birth - meta-analysis Aug 2020

Women's vitamin D levels and IVF results: a systematic review of the literature and meta-analysis, considering three categories of vitamin status (replete, insufficient and deficient)

Human Fertility https://doi.org/10.1080/14647273.2020.1807618

Florina Iliuta, Jose Ignacio Pijoan, Lucía Lainz, Antonia Exposito & Roberto Matorras



To investigate the influence of vitamin D status on in vitro fertilisation (IVF) results, a meta-analysis of 15 cohort studies of 3711 women undergoing IVF was performed. Women were classified into three groups according their vitamin D levels (≥30 ng/mL considered replete/sufficient; 21–29 ng/mL insufficient and <20 ng/mL deficient). Three different meta-analyses were performed: (i) sufficient vs deficient; (ii) sufficient vs 'insufficient + deficient'; (iii) 'sufficient + insufficient' vs deficient. Comparing IVF outcomes in sufficient versus deficient groups (considering autologous and donor oocyte cycles together), we found women with

sufficient vitamin D had significantly higher

- biochemical pregnancy (OR = 1.43 [1.06–1.95]),
- ongoing pregnancy (OR = 1.29 [1.02-1.64]), and
- live birth (OR = 1.74 [1.31–2.31]) rates,

with a non-significant trend to a higher clinical pregnancy rate (OR = 1.31 [0.94–1.82]), whereas implantation and miscarriage rates were similar. When the meta-analysis was restricted to autologous oocytes, the parameters which had been significant in the joint analysis remained significant, and differences in implantation (OR = 1.64, [1.17–2.29]) and clinical pregnancy (OR = 1.47 [1.2–1.69]) rates became significant. No significant differences were found when considering only cycles with donor oocytes. The sufficient + insufficient vs deficient and sufficient vs 'insufficient + deficient' comparisons identified significant differences in live birth rate. The meta-analysis shows that sufficient vitamin D status is associated with better outcomes in IVF. Nonetheless, there are many

demographic, geographic and clinical parameters that may be related to vitamin D status that need to be ascertained before concluding that the better results are due to the higher levels of vitamin D.

# Download the PDF from VitaminDWiki

## IVF 20-40% more succesful when eggs were collected in the summer - July 2023

#### **ScienceAlert**

## IVF 4X more successful for white women with lots of vitamin D - Oct 2012

### Characterizing the influence of vitamin D levels on IVF outcomes

Oxford Journals Medicine Human Reproduction Volume 27, Issue 11Pp. 3321-3327.

B. Rudick1,\*, S. Ingles2,†, K. Chung3, F. Stanczyk3, R. Paulson3 and K. Bendikson3,†

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Received August 29, 2011; Revision received June 13, 2012; Accepted June 21, 2012.

BACKGROUND Vitamin D plays a role in reproductive capacity. Recently, several investigators have demonstrated higher IVF pregnancy rates in vitamin D replete women. The objective of this study was to validate these findings and to further elucidate the role of vitamin D in reproduction among a diverse group of women.

METHODS This was a retrospective cohort study in an academic tertiary care center of 188 infertile women undergoing IVF. Serum levels of vitamin D (25OH-D) were measured in previously frozen serum samples. The main outcome measure was clinical pregnancy, defined as sonographic presence of a heartbeat following IVF.

RESULTS The relationship between vitamin D status and pregnancy rates differed by race (P < 0.01). Among non-Hispanic whites, pregnancy rates declined with progressively lower levels of vitamin D, while in Asians, the reverse was true. Adjusting for age and number and quality of embryos transferred among non-Hispanic whites, the odds of pregnancy were **four times higher in vitamin D replete versus deficient patients**. Live birth rates mirrored pregnancy rates. Vitamin D status was not associated with ovarian stimulation parameters or with markers of embryo quality.

CONCLUSIONS Vitamin D deficiency is associated with lower pregnancy rates in non-Hispanic whites, **but not in Asians, possibly due to their lower IVF success rates**. Vitamin D deficiency was not correlated with ovarian stimulation parameters or with markers of embryo quality, suggesting its effect may be mediated through the endometrium.

PDF is attached at the bottom of this page

## Another study found In vitro fertilization 2X less successful if low vitamin D – Nov 2013

## Influence of vitamin D levels on in vitro fertilization outcomes in donor-recipient cycles.

Fertil Steril. 2013 Nov 5. pii: S0015-0282(13)03154-3. doi: 10.1016/j.fertnstert.2013.10.008.

Rudick BJ, Ingles SA, Chung K, Stanczyk FZ, Paulson RJ, Bendikson KA.

Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Center for Women's Reproductive Health, Columbia University, New York, New York. Electronic address: <a href="mailto:briana.rudick@gmail.com">briana.rudick@gmail.com</a>.

OBJECTIVE: To elucidate the role of vitamin D in reproduction by examining the relationship between recipient vitamin D levels and pregnancy rates in donor-recipient IVF cycles.

DESIGN: Retrospective cohort study.

SETTING: Academic tertiary care center.

PATIENT(S): Ninety-nine recipients of egg donation at University of Southern California Fertility.

INTERVENTION(S): Serum was collected from egg donor recipients before ET and was tested for vitamin D levels [25(OH)D].

MAIN OUTCOME MEASURE(S): Clinical pregnancy as defined by sonographic presence of a heartbeat at 7-8 weeks of gestation.

RESULT(S): In a diverse population of 99 recipients (53% Caucasian, 20% Asian, 16% Hispanic, 7% African American), adjusted clinical pregnancy rates were lower among vitamin D-deficient recipients than among vitamin D-replete recipients (37% vs. 78%).

Live-birth rates were 31% among vitamin D-deficient recipients, compared with 59% among vitamin D-replete recipients. There were no differences in adjusted clinical pregnancy and live-birth rates among recipients who were vitamin D deficient [25(OH)D<20 ng/mL] vs. among those who were vitamin D insufficient [20 ng/mL  $\leq$  25(OH)D<30 ng/mL].

CONCLUSION(S): Nonreplete vitamin D status [25(OH)D<30 ng/mL] was associated with lower pregnancy rates in recipients of egg donation. Since the oocyte donor-recipient model is able to separate the impact of vitamin D on oocyte vs. endometrium, these data suggest that the effects of vitamin D may be mediated through the endometrium.

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PMID: 24210230

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Should We Be Monitoring Vitamin D Levels In Our Infertile Patients? comment on the study

## Clinical pregnancy 1.5 X more likely after IVF when vitamin D level > 30 ng - June 2013

Effect of vitamin D status on clinical pregnancy rates following in vitro fertilization.

CMAJ Open. 2013 Jun 28;1(2):E77-82. doi: 10.9778/cmajo.20120032. eCollection 2013.

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#### **BACKGROUND:**

Recent studies suggest that vitamin D may play a role in human reproduction. Our goal was to investigate whether vitamin D levels are predictive of implantation and clinical pregnancy rates in infertile women following in vitro fertilization (IVF).

#### **METHODS:**

We prospectively evaluated vitamin D status, as determined by serum 25-hydroxy-vitamin D (25 $\underline{OH}$ D) levels, in a cohort of 173 women undergoing IVF at Mount Sinai Hospital, Toronto, Ontario. Serum 25(OH)D samples were collected within 1 week before oocyte retrieval. We classified patients as having sufficient ( $\geq 75$  nmol/L) or insufficient (or deficient; hereafter referred to as "insufficient"; < 75 nmol/L) serum levels of 25(OH)D. We compared patient demographics and IVF cycle parameters between groups. The primary outcome measure was clinical pregnancy (intrauterine sac visible on ultrasound performed 4-5 weeks after embryo transfer).

#### **RESULTS:**

Of the included women, 54.9% had insufficient 25(OH)D levels and 45.1% had sufficient levels.

Women with sufficient levels had significantly higher rates of clinical pregnancy per IVF cycle started (52.5%) compared with women with insufficient levels (34.7%; p < 0.001).

Implantation rates were also higher in the sufficient 25(OH)D group, but the results were not statistically significant. Multivariable logistic regression analysis (adjusted for age, body mass index and day 5 v. day 3 embryo transfer) showed that serum 25(OH)D level may be a predictor of clinical pregnancy (adjusted odds ratio 1.01, 95% confidence interval 1.00-1.03).

#### INTERPRETATION:

Our findings suggest that women with sufficient levels of vitamin D are significantly more likely to achieve clinical pregnancy following IVF. Vitamin D supplementation could provide an easy and cost-effective way of improving pregnancy rates; this merits further investigation.

TRIAL REGISTRATION: ClinicalTrials.gov, no. NCT01348594.

PMID: 25077107

## Vitamin D levels NOT associated with IVF success - Sept 2014 (disagrees with all previous studies)

## Impact of circulating levels of total and bioavailable serum vitamin D on pregnancy rate in egg donation recipients

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Received 15 June 2014, Revised 12 August 2014, Accepted 26 August 2014, Available online 23 September 2014

Objective: To investigate the correlation between total and bioavailable serum 25-OH vitamin D and the pregnancy rate in recipients of donated oocytes.

Design: Retrospective study.

Setting: University-affiliated private IVF center.

Patient(s): A total of 267 patients who were referred to our clinic for oocyte donation from June 2013 to December 2013.

Intervention(s): Serum analysis of vitamin D and bioavailable vitamin D and reproductive outcomes.

Main Outcome Measure(s): Pregnancy and implantation rate.

Result(s):Among all patients, 15.3% (n = 41) were vitamin D replete (vitamin D > 30 ng/mL), 50.2% (n = 134) had vitamin D deficiency (20–30 ng/mL), and 34.4% (n = 92) had insufficient vitamin D (<20 ng/mL). Implantation rates were similar among patients with normal, insufficient, or deficient total serum 25-OH vitamin D levels (61%, 63.4%, and 65.2%, respectively).

## Pregnancy rates did not differ among the three groups (70%, 69.9%, and 73.9%).

Ongoing pregnancy rates were also comparable among the three groups (55.9%, 52.7%, and 60.7%).

The predictive value of total vitamin D regarding pregnancy rate was analyzed by the receiver operating characteristic curve, and the area under the curve (AUC) was 0.468.

The AUC for bioavailable 25-OH vitamin D was 0.499, showing that the analysis of the AUC for vitamin D or bioavailable vitamin D was not informative.

Conclusion(s): Vitamin D insufficiency and deficiency are frequent conditions in our southern European infertile population. In contrast to previous studies, patients who are not vitamin D replete do not have a decreased chance of becoming pregnant with egg donation.

Bioavailable 25-OH vitamin D, which is a better marker of the status than total 25-OH vitamin D, does not correlate with pregnancy rate in recipients of donated

oocytes.

Thus, at this stage, there is insufficient evidence to recommend vitamin D screening in patients undergoing egg donation.

#### See also web

- A recent study in lower-income countries found that a single cycle costs between 50% and 200% of people's average annual income Feb 2024
- 2X increase in stoke in 1 year after IVF treatments
  - in the month after giving birth: 37 strokes per 100,000 IVF related births
  - "About 2 percent of births in the United States involve infertility treatment of some kind, according to the paper."
- 63% having conception problems were Vitamin D deficient

100% of those which specific problems had normal vitamin D level

- More details on the above information from Natural-Fertility-Info.com
- Vitamin D: The Wonder Vitamin That May Help Me Conceive IVF
- Vitamin D Boosts IVF Success
- 60 second video on improving fertility of the women and the man with vitamin D
- Effect of vitamin D status on clinical pregnancy rates following in vitro fertilization CMAJ Open, June 2013

52% more likely to become pregnant if >25 ng than if < 25 ng

PDF is attached at the bottom of this page

• Vitamin D deficiency and infertility: insights from in vitro fertilization cycles Nov 2014

2.2X more likely to get pregnant if > 20 ng of vitamin D PDF is free to patients

## Variety of Fertility treatments - success rates for IVF and IUI - Perplexity AI Aug 2024

### **Lower-Cost Fertility Treatments**

- **Ovulation Induction (OI):** This involves using medications to stimulate ovulation. Common drugs like Clomiphene Citrate (Clomid) can cost as little as \$10 per cycle. These medications help increase the chances of ovulation and, consequently, conception.
- Intrauterine Insemination (IUI): IUI is a procedure where sperm is directly inserted into the uterus to facilitate fertilization. It is less invasive and less expensive than IVF, with costs ranging from \$350 to \$500 per cycle, depending on the location and medications used.
- **Fertility Drugs:** Medications such as Clomid or Letrozole are used to stimulate the ovaries and are generally affordable, costing around \$8 to \$14 per cycle. More potent drugs like gonadotropins can be more expensive, ranging from \$35 to \$140 per cycle.

# **Natural and Lifestyle Approaches**

- **Tracking Ovulation:** By monitoring ovulation signs such as body temperature and cervical mucus, couples can better time intercourse to increase the likelihood of conception. Tools like ovulation predictor kits can assist in this process.
- **Lifestyle Changes:** Adopting a healthy lifestyle, including a balanced diet rich in antioxidants, regular exercise, and reducing stress, can improve fertility. Specific dietary adjustments, such as reducing refined carbohydrates for those with PCOS, may also be beneficial.

## When to Consider IVF

While these alternatives can be effective, IVF may still be necessary in certain cases, such as when there are damaged fallopian tubes, severe male infertility, or when other treatments have failed. Consulting with a fertility specialist can help determine the most appropriate approach based on individual health conditions and fertility challenges. It is essential for individuals and couples to discuss these options with a healthcare provider to tailor a fertility plan that best suits their needs and circumstances.

## **Success Rates**

- IVF:
  - IVF generally has higher success rates compared to IUI. For women under 35, the success rate per IVF cycle can be around 50% to 54%. This rate
    decreases with age, with
    - women aged 38-40 having a success rate of about 26% and
    - those over 40 having a success rate of 8% to 12.9%.
  - IVF is particularly effective for severe infertility issues, such as blocked fallopian tubes or severe male factor infertility.
- IUI:
  - The success rate for IUI is generally lower, ranging from 5% to 20% per cycle.
    - For women under 35, the success rate is about 13%. This rate decreases significantly with age, dropping to around
    - 4% for women over 40.

• IUI is often recommended as a first-line treatment due to its lower cost and less invasive nature.

### **Factors Influencing Success**

- Success rates for both IVF and IUI can be influenced by several factors, including the age of the woman, the underlying fertility issues, the quality of sperm and eggs, and the expertise of the fertility clinic.
- IVF allows for more control over the selection of embryos and can include genetic testing, which can improve success rates, especially for older women or those with specific infertility issues.

Overall, while IVF is more expensive, it offers higher success rates, particularly for more complex fertility issues.

IUI, being less costly and invasive, might be suitable for younger women or those with mild infertility problems, but its success rates are generally lower.

### There have been 16725 visits to this page

The original document is available at

https://vitamindwiki.com/IVF+4X+more+successful+for+white+women+with+lots+of+vitamin+D+%E2%80%93+many+studies



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