

## Abnormal levels of vitamin D on abnormal ovarian folliculogenesis in women with infertility

Mohamadreza Abedzadeh

Trauma Nursing Research Center, Kashan University of Medical Sciences,  
Kashan, Iran

Najme Ahmadi

Trauma Nursing Research Center, Kashan University of Medical Sciences,  
Kashan, Iran

Saeideh Rafiei

Trauma Nursing Research Center, Kashan University of Medical Sciences,  
Kashan, Iran

### Abstract

Polycystic ovary syndrome (PCOS) with a prevalence of 5 to 10 percent is one of the most common endocrine diseases in women and is the most common cause of secondary infertility due to non-ovulation. Insulin resistance in PCOS is one of the reasons for not ovulation. Vitamin D is a basis for natural insulin secretion, which reduces insulin resistance through the effect of college metabolism and regulation of the enclosure gene. This study is a systematic review aimed at determining the effect of non-enclosed vitamin D levels on abnormal ovarian follicles in women with infertility in 2024, and the results indicate that there is a link between vitamin D and PCOS so that high concentrations Vitamin D significantly reduces the incidence of metabolic and clinical disorders, along with polycystic ovary syndrome, such as hirsutism, insulin resistance and infertility in people with the disease.

**Keywords** “vitamin D, Infertility, Polycystic ovarian syndrome, PCOS”.

## Introduction

Infertility is a major global problem, with 60-80 million couples suffering from infertility in the world. Polycystic ovary syndrome (PCOS) is one of the most common endocrine diseases in women with a prevalence rate of 5-10%, and it is the most common cause of secondary infertility due to lack of ovulation. Insulin resistance in PCOS is one of the causes of ovulation failure. Vitamin D is an essential component for the normal secretion of insulin, which reduces insulin resistance by influencing calcium metabolism and regulating insulin receptor genes.

## Search Strategy

This study is a systematic review that was conducted through searching Scopus, PubMed, Web of Science and Google Scholar databases with the keywords polycystic ovary, infertility and vitamin D. After applying the inclusion and exclusion criteria, 5 articles from 2015 to 2024 were extracted and analyzed.

## Results Discussion

Most people with PCOS have vitamin D levels of less than 20 ng/ml. Vitamin D intensifies the property of apoptosis and the lack of this vitamin leads to a decrease in apoptosis, which can be a factor in the development of PCOS and disruption of normal ovarian folliculogenesis. Vitamin D can stimulate aromatase, which causes the conversion of testosterone to estrogen in granulosa cells, and this leads to a balance in androgen and estrogen levels in PCOS patients.

## Conclusions

Considering the prevalence of vitamin D deficiency in women of reproductive age, administration of calcium and vitamin D along with ovulation inducers such as clomiphene can be helpful in the treatment of infertile women with PCOS, especially in clomiphene-resistant individuals.

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