

**THE ROLE OF VITAMIN D IN THE BODY OF WOMEN
DURING MENOPAUSE. (REVIEW ARTICLE)**

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Changes in vitamin D levels during menopause can be related to a number of factors, including hormonal changes, age, and lifestyle changes. Vitamin D plays an important role in maintaining healthy bones and the immune system, and levels can change significantly during menopause. Here are some key areas to consider. Hormonal changes: During menopause, a woman's estrogen levels drop significantly. Estrogen affects the metabolism of calcium and vitamin D. Decreased estrogen levels can lead to decreased absorption of vitamin D and its decreased activity in the body, which increases the risk of osteoporosis and fractures. Problems with calcium absorption: Vitamin D helps the body absorb calcium, and as you age, the body's ability to produce vitamin D from sunlight decreases. This can lead to vitamin D deficiency, especially if a woman does not get enough from food or supplements. Hydrate and nourish the skin: Vitamin D is synthesized in the skin when exposed to sunlight. As we age, especially during menopause, our skin loses its ability to produce vitamin D effectively, which may be another factor in vitamin D deficiency. Osteoporosis Risk: Due to changes in vitamin D and calcium levels, postmenopausal women are at higher risk of osteoporosis, as vitamin D plays a key role in maintaining bone strength. It is important to monitor your vitamin D levels and take supplements if needed to prevent osteoporosis and maintain bone health. Vitamin D Levels and Disease Risk: Recent research also suggests that vitamin D deficiency may be associated with a higher risk of heart disease, diabetes, and other chronic diseases, which is also important during menopause. Early menopause, defined as the loss of ovarian function before age 45, affects about 10% of women. Unfortunately, the number of modifiable risk factors for this condition is very limited, but new evidence suggests that adequate vitamin D intake may reduce the risk of early menopause. A 2017 study in the United States showed how vitamin D and calcium intake was associated with the incidence of early menopause. After adjusting for age, smoking, and other factors, women with adequate vitamin D and calcium intake had a 17% lower risk of early menopause compared with the control group [49]. Studies have shown that estrogens increase the activity of the enzyme responsible for activating vitamin D, so a decrease in estrogen levels can lead

to a deficiency of vitamin D in the body [50]. Vitamin D deficiency is associated with a decrease in the serum concentration of 25(OH)D (calcidol), which has a fairly long half-life in the blood - about 15 days. Serum concentration of 25(OH)D is the best indicator reflecting containing the total amount of vitamin D produced in the skin and obtained from food products and food additives. It is recommended to check the reliability of the method used in clinical practice for determining 25(OH)D against international standards (DEQAS, NIST). When determining the concentration of 25(OH)D over time, it is recommended to use the same method. Determination of 25(OH)D after the use of native vitamin D preparations in therapeutic doses should be carried out at least three days after the last administration of the preparation. Adequate levels of vitamin D are defined as 25(OH)D concentrations of 30 to 100 ng /ml (75–250 nmol /l), insufficiency as 20 to 30 ng /ml (50 to 75 nmol /l), and deficiency as less than 20 ng /ml (50 nmol /l). Concentrations greater than 250 nmol /l can cause toxic effects. The target 25(OH)D value for correction of vitamin D deficiency is 30–60 ng /ml (75–150 nmol /l) [1].

The recommended drug for the treatment of vitamin D deficiency is cholecalciferol (D3) (level of evidence AI), which has comparatively greater efficacy in achieving and maintaining target serum 25(OH)D levels [51].

Patients with diagnosed vitamin D deficiency are prescribed significantly higher doses than for prophylaxis, which is achieved by carrying out loading therapy with native vitamin D, which should be followed by continuous maintenance therapy. However, there are still no standard loading treatment regimens, as well as generally accepted maintenance doses [52].

The US Institute of Medicine recommends a minimum of 600 IU of vitamin D for the general population of apparently healthy individuals aged 18–50 years, a dose that is also endorsed by most clinical guidelines because it achieves 25(OH)D levels greater than 20 ng /mL in 97% of individuals in this age group.

People over 50 years of age have an increased risk of vitamin D deficiency due to infrequent sun exposure, decreased ability to synthesize vitamin D in the skin under the influence of UV rays, a sedentary lifestyle, age-related lactase deficiency , and gastrointestinal diseases accompanied by decreased absorption of vitamin D. In this regard, people over 50 years of age should receive at least 800–1000 IU of vitamin D per day to prevent vitamin D deficiency [1].

The presented data indicate the important role of vitamin D in women of menopausal age. Further studies to clarify the effect of vitamin D deficiency on the development of vegetative, affective and cognitive manifestations of climacteric syndrome and the effectiveness of vitamin D for their prevention and treatment are of significant theoretical and practical relevance.

The number of women over 50 will progressively increase in the coming years, and their growing social inclusion will determine the desire for active and healthy longevity. Particular attention in the postmenopausal period should be paid to the prevention of conditions that threaten life and longevity (Khamoshina M.B., Bril Yu.A. Menopausal disorders: variability of therapeutic approaches. Information bulletin. Status Praesens . 2014, No. 1. P. 20). The common preventive denominator for each patient in menopause should be exogenous replenishment of hormonal deficiencies (Radzinsky V.E., Khamoshina I.G., Shestakova I.G. Menopausal syndrome - therapy and prevention: proven capabilities of phytoestrogens. Gynecology Endocrinology . Doctor.Ru . 2015. №14(115). P. 32-37). In the context of age-related decline in sex hormones, a number of pathological conditions and diseases in postmenopausal women are based on hormone D deficiency, more often referred to as vitamin D deficiency, which is well known for its classical role in calcium, phosphorus homeostasis and skeletal health (Gromova O.A., Torshin I.Yu. Vitamin D - a paradigm shift. Moscow: Torus Press. 2015. P. 435-64). The level of 25(OH)D less than 30 ng /ml among women of reproductive and postmenopausal age was noted in more than 50%. A large international epidemiological study (18 countries) revealed a decrease in vitamin D concentration in 64% of postmenopausal women. (Jolfaie NR, Rouhani MN, Onvani S. The association between Vitamin D and health outcomes in women: A review on the related evidence. J Res Med Sci . 2016. Vol . 21. P. 76). Modern research confirms the possible role of vitamin D in protecting against many common diseases and disorders, such as cancer, cardiovascular diseases, autoimmune diseases, musculoskeletal diseases , fractures, infections and depression, diabetes and metabolic syndrome, obesity, etc. (Gromova O.A., Torshin I.Yu. Vitamin D - a paradigm shift. Moscow: Torus Press. 2015. Pp. 435-64). In order to minimize the above-mentioned diseases, higher doses of vitamin D are currently used than previously (Wimalawansa SJ Associations of vitamin D with Insulin resistance , obesity , type 2 diabetes , and metabolic syndrome . The Journal of Steroid Biochemistry and Molecular Biology. 2018. Vol. 175. P . 177-189). There is evidence that low 25(OH)D levels were associated with a significantly increased risk of all-cause mortality. In the presence of severe vitamin D deficiency, the overall mortality rate in people is almost 2-fold higher than in those whose serum 25(OH)D level is more than 30 ng / ml 4 (Gröber U, Reichrath J, Holick MF Live Longer with Vitamin D? Nutrients . 2015. Vol . 7, №3. P. 1871-1880). There is information in the literature on a reduction in the risk of developing type 2 diabetes by 43% (95% confidence interval 24, 57%) in individuals with a 25(OH)D level of >25 ng / ml, compared with those with 25(OH)D less than 14 ng / ml (Mitri J., Muraru M., Pittas A. Vitamin D and type 2 diabetes : a systematic review European journal of clinical nutrition . J Eur J Clin Nutr . 2011. Vol . 65, No. 9. P. 1005-1015). Menopausal hormone therapy (MHT) as the most effective therapy

for moderate and severe menopausal symptoms can significantly improve the quality of life, but it cannot cover the entire spectrum of disorders occurring in postmenopause. Timely detection and correction of hypovitaminosis D as one of the areas of a comprehensive approach to the treatment of climacteric syndrome (CS) are designed to improve and maintain many health indicators and improve the quality of life in general during this period of a woman's life (Schneider HPG.M., Birkhäuser M. Quality of life in climacteric women . Climacteric . 2017. Vol.20, No. 3.P. 187-194). The purpose of the study The role of vitamin D in the body of women during menopause

References:

1. Russian Association of Endocrinologists, FSU “Endocrinological Research Center”. Vitamin D deficiency in adults: diagnosis, treatment and prevention: Clinical guidelines. - M., 2015. [Russian Association of Endocrinologists, FSU “Endocrinological Research Center”. Vitamin D deficiency in adults: diagnosis, treatment and prevention. Clinical recommendations Moscow ; 2015. (In [Russ .)]
2. Gromova OA, Torshin IY, Dzhidzhikhiya LK . Roles of vitamin D in the prevention and treatment of female infertility. Ginekologiya . 2016;18(3) :34-39. (In [Russ .)]
3. Saint Petersburg Information and Analytical Center. Forecast of values of socio-demographic indicators for Saint Petersburg for the period up to 2021. Saint Petersburg ; 2011. (In [Russ .)]
4. Bouzid D, Merzouki S, Bachiri M, et al. Vitamin D3 a new drug against *Candida albicans*. J Mycol Med . 2017;27(1):79-82. doi : 10.1016/j.mycmed.2016.10.003 .
5. Dorofeykov VV, Zadorozhnaya MS, Petrova NN. Depression and vitamin D // Psychiatry. - 2014. - No. 2. - P. 84-90. [Dorofeykov VV, Zadorozhnaya MS, Petrova NN. Depression and vitamin D. Psychiatry. 2014;(2):84-90. (In [Russ .)]
6. Shivakumar V, Kalmady SV, Amaresha AC, et al. Serum vitamin D and hippocampal gray matter volume in schizophrenia. Psychiatry Res . 2015;233(2):175-179. doi : 10.1016/j.psychres.2015.06.006 .
7. Bener A, Saleh NM. Low vitamin D, and bone mineral density with depressive symptoms burden in menopausal and postmenopausal women. J Midlife Health . 2015;6(3):108-114. doi : 10.4103/0976-7800.165590 .
8. Okereke OI, Singh A. The role of vitamin D in the prevention of late-life depression. J Affect Disord . 2016;198:1 -14. doi : 10.1016/j.jad.2016.03.022 .
9. Pettersen JA, Fontes S, Duke CL. The effects of Vitamin D Insufficiency and Seasonal Decrease on cognition. Can J Neurol Sci . 2014;41(4):459-465. doi : 10.1017/S0317167100018497 .