

Supplying of Certain Vitamins for Pregnant Women in the Southern Regions of the Republic of Uzbekistan

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Abstract: The article presents the results of a study on providing 21-34-year-old pregnant women with vitamins B₁₂ and D. The content of vitamin B₁₂ in the daily diet of the respondents is on average 27,0-53,9% of the norm in the 2nd and 3rd trimesters, while the content of vitamin D is on average 38,0-66,0% less in the 1st and 3rd trimesters.

When studying the concentration of these vitamins in the blood serum, vitamin B₁₂ does not deviate from the norm of 200-1000 pg/ml. Also, the concentration of vitamin D in the blood decreases relative to the norm from the 1st trimester to the 3rd trimester.

Key words: diet, vitamin B₁₂, vitamin D, trimester, hemocestien, blood serum.

Introduction

It is known that the factor of nutrition plays a special role in the normal growth, development, renewal of all tissues and cells in the human body, as well as the proper functioning of physiological and biochemical processes in it. This is especially important in the lives of pregnant women. During pregnancy, the mother's diet should contain (in addition) the necessary nutrients not only for herself but also for the unborn child (Коденцова В.М., Витамины в питании беременных, 2002, (В.А., Особенности питания беременных женщин в сельской местности, 2007, (Е.В., Гигиеническая оценка питания беременных женщин и меры по его оптимизации (на примере центрального региона России), 2009)). Research in recent years has shown that there are a number of nutritional deficiencies in the diet of pregnant women in all developed and developing countries. In particular, the lack of elements such as iron, iodine, calcium, zinc and chromium in the composition of their daily diet leads to the birth of newborns with various defects. Lack of folic acid alone leads to diseases of the nervous, cardiovascular and other systemic organs in infants (Сидирова И.С., 2009). The literature shows that vitamin B₁₂ regulates the amount of homocysteine in the blood of pregnant women, and this condition is important in ensuring blood circulation in the placenta. (Ars CL, 2016, Буранова, 2020) This substance is also involved in the normal development of the fetus. In addition, a steady increase in the amount of hemocysteine during

pregnancy leads to the development of gestosis, evening toxicosis. Therefore, this condition can pose a serious threat to the life of the mother and fetus (A.K., 2009)[5,6,8, 11-16].

Deficiency of some water-soluble vitamins (C, B₂ and B₆) in the daily diet of pregnant women leads to functional deficiency of vitamin D (Коденцова В.М., 2002). Studies of women of childbearing age and pregnant women in the Russian Federation show that vitamin deficiency is not directly related to their place of residence and the seasons. In particular, 5-16% of the subjects living in all regions had B₁, 32-39% had B₂, 7-90% had B₆, and 25-48% had Vitamin D deficiency [9-16]. A study of available sources in this area leads to the conclusion that the current nutrition of pregnant women in the context of the Republic for the last 15-20 years has not been thoroughly and completely studied. Research in this area includes some studies on diseases, both in 1994 in the Andijan region, and in 1999 at the Center for Dietetics of the Tashkent Medical Academy.

The aim of the research

To study the supply of certain vitamins to pregnant women in the southern regions of the Republic of Uzbekistan (Kashkadarya region).

Materials and methods

Observations were performed on pregnant women aged 21-34 out of 24 people living in Kasan district of Kashkadarya region. Nutrition in their eating habits was studied using the traditional questionnaire method. Concentrations of Vitamin D and B₁₂ in blood were determined by enzyme-linked immunosorbent assay. The measurements include a modern biochemical analyzer (MINDRAY MR-96A (WH-92109032. SHINZHEN MINDRAY BIO-MEDICAL ELECTRONICS CO., LTD Mindray Building), Keji 12th Road South, High-Tech Industrial Park, Nshan, Shenzhen, 518057, China International. . GmbH (Europe) Eiffestrabe 80,20537 Hamburg, Germany. Developed 20.02.2019).

Results

The results of research in determining amount of vitamins in the daily diet of pregnant women are given in Table 1 below, as well as the concentration of vitamins D and B₁₂ in their serum in Table 2.

As shown in Table 1, the amount of vitamin D and B₁₂ in the daily diet of the subjects differed significantly from the normative values set for them.

In particular, the amount of vitamin B₁₂ in the 1st trimester is normal, and vitamin D is $1,7 \pm 0,06$ mkg, which is 66,0% less than the norm. In the 2nd trimester, there is a corresponding change in these indicators, as the amount of vitamin B₁₂ in the daily diet of respondents was $1,9 \pm 0,37$ mkg instead of the normal 2,6 mkg, which is on average 27,0%

lower than the norm. Also, the amount of vitamin D in the diet was $3,1\pm0,46$ mkg, which is 38% lower than the norm.

By the 3rd trimester of pregnancy, the amount of vitamin B₁₂ and D in the diet decreased compared to the 2nd trimester. That is, the amount of vitamin B₁₂ is $1,2\pm0,59$ mkg, and the amount of vitamin D is $2,3\pm0,50$ mkg. These figures are on average 50,0% lower than the norm.

Table 1**The amount of certain vitamins in the daily diet of pregnant women**

Periods of pregnancy	Vitamin B ₁₂		Vitamin D	
	Quantity, mkg	Result, mkg	Quantity, mkg	Result, mkg
1 st -trimester	2,6	$2,6\pm0,84$	5,0	$1,7\pm0,06$
2 nd -trimester	2,6	$1,9\pm0,37$	5,0	$3,1\pm0,46$
3 rd -trimester	2,6	$1,2\pm0,59$	5,0	$2,3\pm0,50$

Finding out concentration of vitamins in the blood serum is an important indicator in the objective assessment of supplying these micronutrients of body. (De-Regil LM, 2016). In this regard, studies revealed serum concentrations of vitamin B₁₂ and D in pregnant women (Table 2).

Table 2**Concentrations of certain vitamins in the serum of pregnant women**

Periods of pregnancy	Vitamin B ₁₂		Vitamin D	
	Quantity, pg/ml	Result, pg/ml	Quantity, ng/ml	Result ng/ml
1 st trimester	200-1000	$578,0\pm71,2$	12,6-42,3	$18,25\pm7,35$
2 nd trimester	200-1000	$612,9\pm53,0$	12,6-42,3	$15,3\pm4,4$
3 rd trimester	200-1000	$522,1\pm18,8$	12,6-42,3	$10,8\pm0,81$

According to the results obtained, the concentrations of these vitamins do not exceed the amount specified in the 1st and 2nd trimesters of pregnancy. In the 3rd trimester, it can be seen that the concentration of vitamin D is less than the lowest of the norm.

In the monitored pregnant women in the 1st trimester of pregnancy, the average serum vitamin B₁₂ concentration was $578,0\pm71,2$ pg/ml, this figure represents an average of 96,3%

of the normal 200–1000 pg/ml. The concentration of vitamin D is $18,25 \pm 7,35$ ng/ml, which is also normal.

The figures below (Figures 1 and 2) show the percentage concentration of vitamins B₁₂ and D in the serum of the subjects.

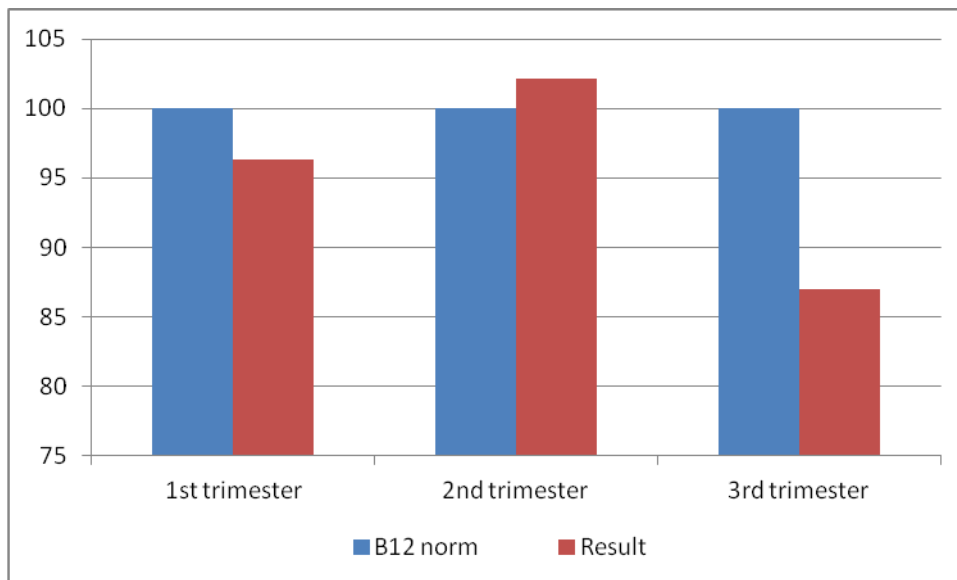


Figure 1. Serum vitamin B₁₂ concentration in pregnant women (in% of normal).

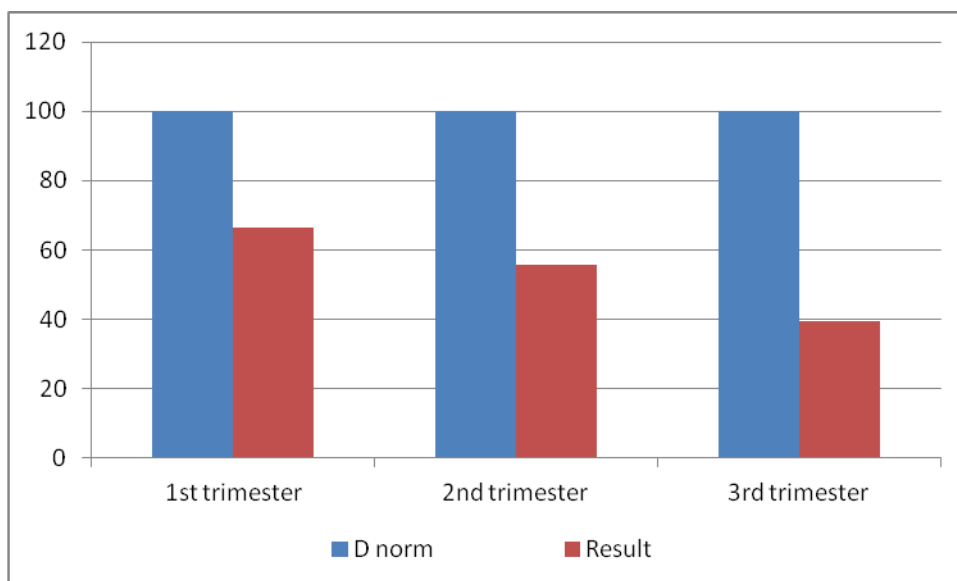


Figure 2. Serum vitamin D concentration in pregnant women (in% of normal)

As can be seen in Figures 1 and 2 above, the concentration of vitamin B₁₂ in the blood of this subjects was close to normal in the 1st trimester, slightly higher in the 2nd trimester, and 13% lower than normal in the 3rd trimester. Vitamin D concentrations also decreased to 33.6% in the 1st trimester, 44.2 % in the 2nd trimester, and 60.6% in the 3rd trimester.

In figure 3, the first four columns of the image showed the serum concentrations of vitamin B₁₂ and D, and the second four columns showed the daily intake of these vitamins. As it appears, the amount of vitamin B₁₂ in the diet was normal in the 1st trimester and decreased over the course of 2-3 trimesters. Its serum concentration was around the norm in the 1st and 2nd trimesters and decreased by 13% in the 3rd trimester. Vitamin D, on the other hand, is significantly reduced in both nutrition and blood during all three trimesters.

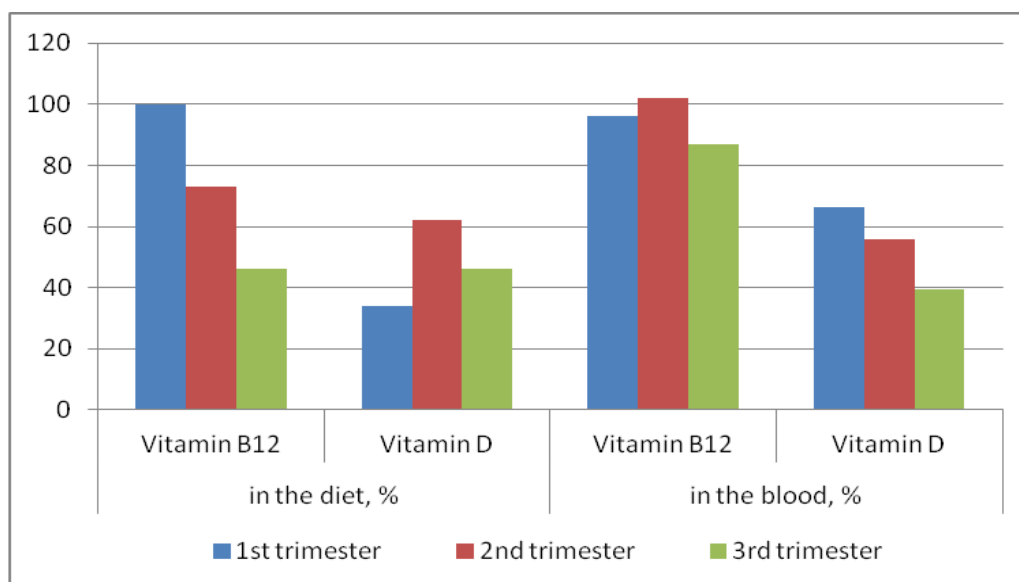


Figure 3. Provision of pregnant women with vitamins B₁₂ and D.

Conclusion

The study examined the content of vitamins B₁₂ and D in the daily diet and serum of pregnant women living in rural areas of the southern region of the Republic of Uzbekistan. Based on the results, it has been concluded that:

1. The supply of vitamin B₁₂ to pregnant women was normal in the 1st trimester and decreased by an average of 27,0-53,9%, respectively, in the 2-3rd trimesters.
2. On the other hand, Vitamin D, decreased during all three trimesters, averaging 38,0-66,0%.
3. In this study to determine the amount of vitamins in the serum, a decrease in vitamin B₁₂ was observed only in the 3rd trimester.
4. Comments obtained to identify the amount of vitamin D indicate that, its concentrations are 66,4-55,8 and 39,4%, respectively in relation to the norm in each trimester.

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