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Using of Iron, Vitamin D, Multivitamin in Pregnant Women and the Related Factors

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ABSTRACT

Objectives: The aim of this study is to determine the frequency of iron, vitamin D and multivitamin supplement usage among pregnant women and the factors associated with it.

Methods: This cross-sectional study was conducted between March 15, 2018 and September 30, 2018 among a total of 400 pregnant women by the questionnaire form consisted of 27 questions. Hemoglobin values below 11g/dl were considered as anemia.

Results: The mean age of the pregnant women was 28.2±5.2 years, and 170 (42.5%) of them had anemia. Among the pregnant women, 302 (75.5%) had been recommended to use iron, 208 (52.0%) had been recommended to use Vit D and 308 (77.0%) had been recommended to use multivitamin. Among the pregnant women 250 (62.5%) of them use iron, 146 (36.5%) of them use vitamin D and 262 (65.5%) of them use multivitamin.

Conclusion: Although programs for iron and vitamin D have been carried out for many years, the use of vitamin D and iron in pregnant women were not at the desired level. Although there is not a routine recommendation, multivitamin use during pregnancy was found to be quite common.

Keywords: Iron, nursing, pregnant women, vitamin D, vitamins

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INTRODUCTION

Adequate and balanced nutrition during pregnancy is vital to maintain both maternal and fetal health. Within the scope of prenatal care, it is critical to regulate nutrition during preconceptional and pregnancy periods and to meet nutritional needs in accordance with guidelines in order to protect mother and baby health.[1-3]

Anemia affects approximately 40% of pregnant women worldwide and half of anemia cases are associated with iron deficiency.[2,3] Iron deficiency causes fetal outcomes such as preterm labor, neonatal mortality and infection.[4]

World Health Organization (WHO) recommends daily or intermittent use of iron prophylactically depending on the prevalence of anemia in the countries.[1,2] Since 2005, prophylactic iron supplementation has been recommended to all pregnant women including the postpartum period (40-60 mg/day), and treatment dose (100-120 mg/day) is given there is a presence of anemia in Turkey.[5] Evidently, however, the expected targets have not been achieved with this practice. The prevalence of anemia in the 1990s was 39.6% in Turkey, however the prevalence was 33.3% in 2000.[6] In addition, the prevalence of anemia was 32.4% in 2005, when iron supplementation started during pregnancy, and was 34.4% in 2016.[6]

In addition to iron deficiency anemia, vitamin D (Vit D) deficiency and insufficiency is commonly observed in pregnant women all over the world and in Turkey. Although the criteria for Vit D assessment vary among countries, the prevalence of Vit D insufficiency varies between 9% and 83% in pregnant women.[7] The prevalence of Vit D insufficiency in pregnant women in Mediterranean countries ranges from 9.3% to 41.4%, and the deficiency ranges from 22.7% to 90.3%.[8] According to findings of studies with pregnant women in different regions of Turkey, Vit D insufficiency ranges from 9.3% to 62.6%, Vit D deficiency ranges from 18.2% to 94.2%, and severe Vit D deficiency ranges from 24.2% to 46%.[9-14]

Insufficient intake of vitamins from food despite the increased need during pregnancy leads to deficiencies and various maternal and fatal problems may occur. There are different research findings regarding the use of Vit D in pregnancy.[14-17] According to WHO, there is insufficient evidence to conclude that the use of Vit D in pregnancy is beneficial or harmful, so WHO neither recommends nor discourages the routine use of Vit D to improve maternal and fatal outcomes.[15] In Turkey, Vit D, which is started at 1200 IU once a day from 12th week to all pregnant women regardless of their blood levels in primary care, is recommended to continue until the sixth month of the postpartum period.[18]

Folate deficiency in addition to iron and Vit D deficiency causes anemia and neural tube defects in fetus, and vitamin A deficiency causes nyctalopia. In addition to insufficient calcium intake, deficiency of other vitamins and minerals such as E, C, B6 and zinc increases the risk of preeclampsia.[15] WHO recommends folic acid in addition to iron supplementation. It also states that certain vitamins and minerals can be met by nutrition and can be supplemented with supplements in case of deficiency but does not recommend routine use of multivitamin (MV) to improve maternal and fetal outcomes.[15] Similarly, there are no recommendations for the routine use of MV in prenatal care guidelines in Turkey. It is stated that folic acid can be started 400-800 mcg/day one month before pregnancy and, in high risk situations, high doses (4 mg/day) can be continued before pregnancy for three months and until the 12th week of pregnancy.[19]

In the literature it is reported that the use of iron and folic acid during pregnancy is related to some factors such as the age, education and income level, employment status, number of pregnancies, complaints during pregnancy, smoking habits, spousal support, obtaining nutritional counseling, level of knowledge about iron and folic acid use in pregnancy, early initiation of prenatal care.[20-23]

In Turkey, iron supplementation has been given to pregnant women since 2005 and Vit D application has been continuing since 2011 without checking blood values.[5] Although there are studies on factors related to iron use of pregnant women, there is limited data on their Vit D and MV use. Therefore, the aim of this study is to determine the frequency of iron, Vit D and MV usage among pregnant women and the factors associated with it.

METHOD

This cross-sectional study was conducted between March 15, 2018 and September 30, 2018 by Mersin University Nursing Faculty, Department of Public Health Nursing and Mersin State Hospital. The population of the study consisted of pregnant women in Mersin. As the exact number of pregnant women could not be reached at the time, the number of births in Mersin in 2017 was taken as reference. A total of 400 women who are hospitalized for delivery or before discharge (24-48 hours after delivery) were included in the study. Epi Info 7 StatCalc was used to calculate the minimum sample size and the sample size was estimated as 379 women, assuming 95% confidence interval and 5% sampling error. The number of births in 2017 was 28.040 in Mersin and the frequency of regular iron use of pregnant women was taken as 50% according to previous studies.[20] After allowing 5% overestimation for any loss, the final sample size was calculated as 400 patients. After that, 400 women who had recently given birth in Mersin State Hospital were reached. Mersin State Hospital was chosen because it had the highest number of delivery beds in the city and pregnant women from various regions of the city were admitted to this hospital. In order to evaluate the use of supplements during pregnancy, women who were between the ages of 18 and 45, who were in early postpartum period were included in the study sample. Babies born after the 37th week of gestation are considered term and babies born before the 37th week are considered preterm.[19] Data were collected through face-to-face interviews using a questionnaire prepared by the researchers based on the relevant literature.[11,14,20] The questionnaire form consisted of 27 questions and there were 4 questions about sociodemographic characteristics of the women, 7 questions about their health and pregnancy history, and 16 questions about their iron, Vit D and MV usage during pregnancy. Current anemia was evaluated using hemoglobin (Hb) and hematocrit (Htc) values, which are normally checked during admission to the hospital and recorded in a patient file. Since all the hospitalized pregnant women had been in the third trimester, Hb values below 11g/dl were considered as anemia.[2] Since 25(OH)D levels were not present in the files of the pregnant women, Vit D levels could not be assessed.

Pregnant women with cognitive impairment and communication disabilities were excluded in the study.

Data were evaluated by SPSS software (ver. 16) using descriptive statistics such as frequency, percentage, mean, standard deviation and chi-square test for significance. The difference between the groups at chi-square test was evaluated by MedicReS/E-Picos. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The study included 400 pregnant women. The mean age of the women was 28.2±5.2 years, 303 (75.8%) of them had income less than expenses, and the last pregnancy of 181 (45.2%) of them was not planned. Also, 391 (97.8%) of the pregnant women who were admitted to the hospital for delivery were at term and the Hb values of 170 (42.5%) were less than 11.0 mg/dl. The sociodemograpgic features and pregnancy history of pregnant women are summarized in Table 1.

Among the pregnant women, 302 (75.5%) had been recommended to use iron supplementation and the blood values of 204 (51.0%) of them were examined before iron supplementation was started. On the other hand, 123 (30.8%) of the pregnant women stated that they never took iron supplementation. Among the pregnant women, 208 (52.0%) had been recommended to use Vit D, but the blood values of only 30 (7.5%) of them were examined before Vit D supplementation was started. On the other hand, 229 (57.2%) of the pregnant women stated that they never used Vit D. The women were recommended a daily supplement of Vit

Table 1. The sociodemograpgic features and pregnancy history of pregnant women

	n (%)		n (%)
Age groups		Total pregnancy number	
19 years and under	11 (2.8)	First pregnancy	120 (30.0)
20-24 years	105 (26.2)	Second and third pregnancy	207 (51.8)
25-29 years	127 (31.8)	Fourth and over pregnancy	73 (18.2)
30-34 years	108 (27.0)	Total abortion number	
35-39 years	42 (10.5)	None	346 (86.5)
40-44 years	7 (1.7)	One abortion	42 (10.5)
Education status		Two abortion	6 (1.5)
Illiterate	19 (4.8)	Three and over abortion	6 (1.5)
Literate	18 (4.5)	Low birthweight	
Primary school	75 (18.7)	No	365 (91.2)
Middle school	124 (31.0)	Yes	35 (8.8)
High school	129 (32.2)	Planned pregnancy	
University	35 (8.8)	Planned	219 (54.8)
Income status		Unplanned	181 (45.2)
Equivalent to income	80 (20.0)	Gestation age	
Income over than expense	17 (4.2)	Preterm	9 (2.2)
Income less than expense	303 (75.8)	Term	391 (97.8)
Working status		Presence of anemia	
Yes	30 (7.5)	Have anemia	170 (42.5)
No	370 (92.5)	No anemia	230 (57.5)
Chronic disease		Previously anemia history	
Yes	15 (3.8)	Yes	32 (8.0)
No	385 (96.2)	No	368 (92.0)
Stillbirth		Previously take anemia treatment who had previously anemia history	
Yes	378 (94.5)	Yes	27 (84.4)
No	22 (5.5)	No	5 (15.6)

Hb: Hemoglobin.

D as 2-10 drops (260- 1400 IU) or 1 ampoule (300.000 IU). On the other hand, 124 (31.0%) of the pregnant women stated that they never used MV, 14 (3.5%) used it but quit it later, and 262 (65.5%) used it. In this study, 54 (13.5%) women stated that they did not use iron, Vit D or MV, whereas 100 (25.0%) women stated that they used all three of them together. Iron, vitamin D and multivitamin usage of pregnant women are summarized in Table 2.

Also, while 111 (65.3%) of the women with current anemia regularly received iron supplementation, 11 (6.5%) started it but stopped later and 48 (28.2%) never used it. There is no difference between women with and without anemia in terms of iron use characteristics (p=0.600). The effect of sociodemographic and pregnancy characteristics on the use of iron, vitamin D and multivitamin are summarized in Table 3.

Table 2. Iron, vitamin D and multivitamin usage of pregnant women

	Iron	Vitamin D	Multivitamin		Iron	Vitamin D	Multivitamin
Drug recommendation				Drug usage			
Yes	302 (75.5)	208 (52.0)	308 (77.0)	Regular	165 (65.2)	99 (68.8)	176 (67.4)
No	98 (24.5)	192 (48.0)	92 (23.0)	Irregular	88 (34.8)	45 (31.2)	85 (32.6)
Who recommended the drug?*				Days used per week			
Family doctor	205 (56.5)	174 (75.7)	252 (76.8)	1 days	3 (1.2)	2 (1.4)	2 (0.8)
Midwife/nurse	10 (2.7)	21 (9.1)	13 (4.0)	2 days	8 (3.2)	5 (3.5)	3 (1.2)
Private doctor	148 (40.8)	35 (15.2)	63 (19.2)	3 days	21 (8.5)	16 (11.2)	19 (7.3)
Drug use status				4 days	45 (18.2)	13 (9.1)	36 (13.8)
No, I never used	123 (30.8)	229 (57.2)	124 (31.0)	5 days	12 (4.8)	4 (2.8)	18 (6.9)
I started and left	27 (6.7)	25 (6.3)	14 (3.5)	6 days	2 (0.8)	4 (2.8)	6 (2.3)
Yes, I used	250 (62.5)	146 (36.5)	262(65.5)	7 days	157 (63.3)	99 (69.2)	176 (67.7)
Mean use time (months)	4.0±0.1	2.7±0.1	3.7±0.1	Blood leves of pre-medication			
Pharmaceutical form				Measured	204 (51.0)	30 (7.5)	8 (2.0)
Tablet	241 (93.1)	0 (0.0)	260 (100.0)	Not measured	179 (44.8)	323 (80.8)	292 (73.0)
Drop	18 (6.9)	152 (88.4)	0 (0.0)	Don't remember	17 (4.2)	47 (11.7)	100 (25.0)
Ampoule	0 (0.0)	20 (21.6)	0 (0.0)	Presence of side effects			
The state of use of the drug recommended				Yes	98 (35.4)	84 (50.9)	26 (9.6)
No, I never used	25 (8.3)	39 (18.8)	33 (10.7)	No	179 (64.6)	81 (49.1)	246 (90.4)
I started and left	27 (8.9)	25 (12.0)	14 (4.5)	Side effects*			
Yes, I used	250 (82.8)	144 (69.2)	261 (84.8)	Indigestion/gas	14 (5.1)	9 (5.6)	5 (1.9)
Reason the never use				Constipation	25 (9.2)	2 (1.2)	3 (1.1)
No one suggested	96 (78.1)	180 (78.6)	83 (66.9)	Diarrhea	12 (4.6)	1 (0.6)	2 (0.7)
Not required	11 (8.9)	27 (11.8)	16 (12.9)	Anorexia	8 (2.9)	0 (0.0)	0 (0.0)
My environment did not recommend	3 (2.4)	1 (0.4)	1 (0.8)	Nausea/vomiting	61 (32.3)	20 (12.3)	13 (4.9)
Forgot	6 (4.9)	8 (3.5)	8 (6.5)	Stomach ache	41 (15.0)	2 (1.2)	2 (0.7)
Probable side effects	3 (2.4)	4 (1.7)	10 (8.1)	Frequent urination	27 (9.9)	0 (0.0)	4 (1.5)
Missing data	4 (3.3)	9 (4.0)	6 (4.8)	Frequent water drinking	22 (8.1)	0 (0.0)	2 (0.7)
Reason for starting and dropping				Use of the drug in the day			
Intestinal complaint and side effects	21 (77.8)	19 (76.0)	10 (76.9)	Before breakfast at morning	213 (85.2)	3 (2.1)	9 (3.4)
I did not want to use	6 (22.2)	6 (24.0)	3 (23.1)	After breakfast at morning	13 (5.1)	65 (44.4)	123 (46.9)
				After lunch	2 (0.8)	1 (0.7)	33 (12.6)
				Before dinner	6 (2.4)	1 (0.7)	2 (0.8)
				After dinner	8 (3.2)	9 (6.2)	6 (2.3)
				Before bedtime	3 (1.2)	1 (0.7)	0 (0.0)
				During the day	5 (2.1)	66 (45.2)	89 (34.0)

Mg: Miligram; IU: International unit.

The data were presented as n(%) and mean±standard deviation, where appropriate.

*Multiple stylish marked.

DISCUSSION

Iron-deficiency anemia in pregnancy is a major public health problem all around the world and in Turkey. According to WHO data, the prevalence of anemia is 40.1% (36.4% to 44.6%) in pregnant women worldwide, with the highest prevalence being in South East Asia (48.1%) and Africa (46.2%), and the lowest prevalence being in America (25.5%) and Europe (26.5%).[2] The prevalence of anemia in

Table 3. The effect of sociodemographic and pregnancy characteristics on the use of iron, vitamin D and multivitamin

	Iron use				Vitamin D use				Multivitamin use			
	No	I left	Yes	p	No	I left	Yes	p	No	I left	Yes	p
Age groups												
18-29 years	94 (38.7)	14 (5.7)	135 (55.6)	<0.001*	143 (58.8)	12 (4.9)	88 (36.3)	0.370	73 (30.0)	9 (3.7)	161 (66.3)	0.850
30-44 years	29 (18.5)	13 (8.3)	115 (73.2)		86 (54.8)	13 (8.3)	58 (36.9)		51 (32.5)	5 (3.2)	101 (64.3)	
Education												
Illiterate/literate	8 (21.6)	4 (10.8)	25 (67.6)		20 (54.1)	4 (10.8)	13 (35.1)		15 (40.5)	2 (5.4)	20 (54.1)	
Primary school	68 (34.2)	18 (9.0)	113 (56.8)	0.040†	115 (57.8)	14 (7.0)	70 (35.2)	0.590	72 (36.2)	8 (4.0)	119 (59.8)	0.020†
High school and over	47 (28.7)	5 (3.0)	112 (68.3)		94 (57.3)	7 (4.3)	63 (38.4)		37 (22.6)	4 (2.4)	123 (75.0)	
Income												
Equivalent to income	12 (15.0)	11 (13.8)	57 (71.2)		31 (38.7)	11 (13.8)	38 (47.5)		26 (32.5)	4 (5.0)	50 (62.5)	
Income over than expense	3 (17.6)	1 (5.9)	13 (76.5)	0.001‡	10 (58.8)	1 (5.9)	6 (35.3)	0.001‡	5 (29.4)	1 (5.9)	11 (64.7)	0.860
Income less than expense	108 (35.6)	15 (5.0)	180 (59.4)		188 (62.0)	13 (4.3)	102 (33.7)		93 (30.7)	9 (3.0)	201 (66.3)	
Working status												
Unemployed	116 (31.4)	26 (7.0)	228 (61.6)	0.420	214 (57.8)	23 (6.3)	133 (35.9)	0.690	113 (30.5)	14 (3.8)	243 (65.7)	0.470
Employed	7 (23.4)	1 (3.3)	22 (73.3)		15 (50.0)	2 (6.7)	13 (43.3)		11 (36.7)	0 (0.0)	19 (63.3)	
Pregnancy planning												
Unplanned	74 (40.9)	15 (8.3)	92 (50.8)	<0.001*§	118 (65.2)	12 (6.6)	51 (28.2)	0.010*§	70 (38.6)	7 (3.9)	104 (57.5)	0.010*§
Planned	49 (22.4)	12 (5.5)	158 (72.1)		111 (50.7)	13 (5.9)	95 (43.4)		54 (24.7)	7 (3.2)	158 (72.1)	
Chronic disease												
No	120 (31.1)	26 (6.8)	239 (62.1)	0.640	224 (58.2)	23 (6.0)	138 (35.8)	0.130	121 (31.4)	13 (3.4)	241 (65.2)	0.540
Yes	3 (20.0)	1 (6.7)	11 (73.3)		5 (33.3)	2 (13.3)	8 (53.4)		3 (20.0)	1 (6.7)	11 (73.3)	
Total pregnancy number												
First pregnancy	55 (45.8)	2 (1.7)	63 (52.5)		73 (60.8)	3 (2.5)	44 (36.7)		35 (29.2)	1 (0.8)	84 (70.0)	
Two and third pregnancy	52 (25.1)	13 (6.3)	142 (68.6)	<0.001‖¶	115 (55.6)	13 (6.3)	79 (38.1)	0.090	60 (29.0)	11 (5.3)	136 (65.7)	0.100
Fourth and over pregnancy	16 (22.0)	12 (16.4)	45 (61.6)		41 (56.2)	9 (12.3)	23 (31.5)		29 (39.7)	2 (2.7)	42 (57.6)	
Gestational age												
Preterm	2 (22.2)	2 (22.2)	5 (55.6)	0.170	4 (44.4)	1 (11.2)	4 (44.4)	0.680	3 (33.3)	0 (0.0)	6 (66.7)	0.840
Term	121 (30.9)	25 (6.4)	245 (62.7)		225 (57.5)	24 (6.1)	142 (36.4)		121 (30.9)	14 (3.6)	256 (65.5)	
Presence of anemia												
No	75 (32.6)	16 (7.0)	139 (60.4)	0.600	127 (55.2)	16 (7.0)	87 (37.8)	0.580	62 (27.0)	9 (3.9)	159 (69.1)	0.120
Yes	48 (28.2)	11 (6.5)	111 (65.3)		102 (60.0)	9 (5.3)	59 (34.7)		62 (36.5)	5 (2.9)	103 (60.6)	

Hb: Hemoglobin.

The data were presented as n (%).

Chi-square test.

The variables that caused the difference between the groups were marked as *non-user, †high school and over, ‡equivalent to income, §user, ‖fourth and over pregnancy, ¶first pregnancy.

pregnant women in Turkey is 34.4% (16.5%- 60.2%).[3] While the present study findings show similarities with the findings of WHO about the world and Turkey, it is quite above the European average. Although 88.9% of the pregnant women in Turkey received prenatal care at least four times in primary care and despite the implementation of a pregnancy iron supplementation program for more than 10 years and free iron supplementation to pregnant women with low income, almost half of the pregnant women in the study had anemia and about one third of them didn't use iron supplementation, which is an important issue that needs investigating.[19,24] As a matter of fact, the prevalence of anemia, which was 32.4% in 2005 when routine iron supplementation for pregnant women started, increased to 34.4% in 2016, which again suggests that there have been problems in practice.[3] The most important causes of anemia are insufficient iron stores before pregnancy and insufficient iron intake during pregnancy as well as physiological reasons during pregnancy.[25] By assessing the prevalence of anemia in women of reproductive age in society, the intermittent use of iron supplements recommended by WHO and enrichment of nutrients in terms of iron and folic acid may reduce the prevalence of anemia during pregnancy.[26,27]

Although all pregnant women in Turkey have been recommended prophylactic administration of iron supplements beginning from the 16th week of pregnancy since 2005, there seem to be some problems with the recommendation and use of iron supplementation. Research suggests that not all pregnant women are recommended to receive iron supplementation, nearly half of pregnant women do not use iron supplements, and side effects of iron supplementation affect its use.[19,27] In line with the literature, our results showed that iron supplementation had not been recommended for one quarter of the pregnant women in our study and that only three-fifths of the participants used their medication. In order to decrease the prevalence of anemia in pregnancy, it is essential to increase the compliance of pregnant women with iron treatment. In order to ensure compliance, use of iron supplements should be recommended in pregnant follow-up in primary care, nurses and midwives should question use of iron supplements during each follow-up and home visit, and problems associated with drug use should be identified and solved in the early stages.

In the literature it is stated that the side effects are the most common reason why pregnant women do not use iron supplements.[1,28] Similarly, the most important reason for stopping iron supplements after starting it was the side effects in our study. Most pregnant women take iron supplements on an empty stomach in the morning, which could contribute to the development of side effects.[27] Forgetfulness and side effects make adherence to daily treatment difficult. To prevent adherence problems and reduce side effects, WHO recommends intermittent use in populations with anemia prevalence among pregnant women of less than 20%. For intermittent use, supplementations with 120 mg of iron and 2.8 mg of folic acid could be used once a week.[1,3]

Since 2011, all pregnant women in Turkey have been recommended to take Vit D as 1200 IU once a day from the 12th week of pregnancy until the sixth month of the postpartum period.[5] However, research suggests that pregnant women do not regularly use Vit D.[10] Kırca and Dolgun found that 30% of the pregnant women in their study did not use Vit D, and that higher rates of use might be associated with higher education and higher income levels of more than half of the pregnant women.[29] In our study, the use of Vit D among the participants was higher than the rate reported by other studies in the literature. This result might have been caused by the fact that nearly half of the pregnant women in or study had not been recommended to take Vit D. In fact, research suggests that only 55.6% of health care professionals recommend pregnant women Vit D.[30] The fact that half of the pregnant women were not recommended Vit D and three out of ten pregnant women who were recommended this supplement did not actually use it although Vit D supplement program has been a routine practice in pregnancy is a condition that needs investigating.

Another problem associated with the use of Vit D is the recommended dosage and route of administration. Although the daily need for Vit D increases during pregnancy, there is no consensus on the dosage of this supplementation. WHO does not recommend routine Vit D supplementation to pregnant women but recommends 200 IU daily Vit D intake depending on the need, in addition to nutrition and sunlight when deficiency is detected by risk assessment.[8,12] The US National Academy of Sciences and the National Institute of Medicine recommend Vit D as 400-600 IU per day during pregnancy and specify the maximum dose as 4000 IU per day.[31] Turkish Ministry of Health (TMH) recommends 1200 IU Vit D daily. However, the recommended doses and doses used in practice vary according to studies in Turkey. Kara-Elitok et al. found that the highest rate of Vit D supplementation recommended was 800-1000 IU/day.[30] Gür et al. found that only 16% of pregnant women regularly received 1200 IU Vit D.[10] The recommended doses of supplementation varied as the daily dose was 260 IU to 1400 IU for those pregnant women using drops and 300.000 IU for those using ampoules in our study. Vit D excess can mani-

fest itself as hypercalcemia and hypercalciuria, and it can cause kidney stones in kidneys and urinary tract. It is stated that daily use of 10.000 IU-40.000 IU Vit D may cause toxicity in adults.[32] There are a limited number of studies on the toxic dose in pregnancy, and these studies report that the safe dose range is 4000 IU per day and that 300.000 IU can cause toxicity.[33,34] The results in our study showed that those pregnant women taking Vit D as drops used it at safe doses, but those taking Vit D as ampoules actually used doses of Vit D that might cause toxicity. Although several factors are associated with the toxic effect of Vit D, it may be dangerous in high doses taken at one time. In addition, given that the pregnant women who were recommended supplements actually used them irregularly, it is vital to observe whether the recommended supplements are used at the right dose and time and for appropriate periods of time. It is essential to determine the risk factors that may affect toxicity and to closely monitor the toxicity in pregnant women with high dose in particular.[32,34] As a matter of fact, it is recommended in TMH guidelines that Vit D supplementation should be started regardless of blood results and that pregnant women using Vit D should be monitored for signs of hypercalcemia.[18]

Although it seems economical to start Vit D without a blood test in line with the recommendation of TMH, it will be more cost effective and safer to start Vit D for pregnant women whose needs are determined as a result of blood tests because this prevents unnecessary and overdose uses. The variation in the need for Vit D on a regional and individual basis and the fact that a dosage being sufficient in one region can be insufficient in another region support this view.[10] In addition, a large proportion of the pregnant women in our study who did not use Vit D stated that they didn't think it was necessary. Nevertheless, determining the need of pregnant women by means of a blood test may be motivating for the use of supplements. Pregnant women who do not have severe Vit D deficiency should be encouraged to benefit from daylight adequately, to exercise and to increase their intake of nutrients containing Vit D in their diet, but Vit D supplements should be recommended in case of deficiency and insufficiency.[1,3]

Vitamin deficiencies or excessive intake during pregnancy may increase the risk of maternal and fetal health problems. A meta-analysis on the subject showed that the use of iron folic acid and MV reduced the number of low birth weight infants, preterm and stillbirths, but the results were not significant in the statistical analysis.[32] Despite the lack of routine practices in the guidelines recommended by WHO or TMH, MV use during pregnancy is common in Turkey. Adıgüzelet al. found that 78.3% of pregnant women took MV.[34] Çağlayanet al. found that 49.3% of pregnant women used only MV, 11% used only iron supplements, and 17.7% used both MV and iron supplements.[20] Similarly, MV was recommended to two-thirds of the pregnant women and they used MV more than other supplements in our study. The use of MV may be beneficial especially for low-income countries, but it should be kept in mind that it may also have harmful effects.[21,35]

Although it was stated in the literature that presence of planned pregnancy did not affect the use of iron supplements, the rates of use of all recommended supplements were higher in those with planned pregnancy in our study. [20,27] This situation may be related to better adaptation to pregnancy in planned pregnancies.

In addition, having higher levels of education and income was found to affect the adaptation to pregnancy and the use of iron supplementation.[35-37] Similarly, the use of this supplement was also higher among those with higher levels of education and income in our study.

One of the factors that affect women to comply with the recommendations and use supplements during pregnancy is their socio-economic characteristics. Although WHO stated that pregnant women with low socio economic levels are at risk in terms of anemia and vitamin deficiency and recommends the use of supplements in this group, it was observed in the current study and in the literature that pregnant women with low education and income levels consume the recommended supplements less.[35,37,38] Providing training on iron and Vit D usage and providing free access to these supplements to pregnant women with low socioeconomic status who are at risk in primary care may increase their use.

In the present study, women over the age of 31 and who were pregnant for two or more times were using iron preparations at a higher rate. However, it has been explained that the use of iron and folic acid is higher between the ages of 25 and 30 years compared to 31 and over, and this situation is more careful and more willing to comply with the recommendations in some studies.[19,20] Similar to the current study, the study of Mitra et al. reported that those over the age of 25 years and those who had two or more pregnancies had better compliance.[38] Those who are younger than 30 years and first time pregnant women may have felt more healthy and did not need additional supplements or did not want to use anything additional with the fear of harming the baby because of their first pregnancy. Counseling for young and first pregnancies may increase the use of supplements.

Our study has some limitations. Since the study is cross-sectional, a definite cause and effect relationship cannot be reached from the research results. Since the use of supplements during pregnancy was wanted to be evaluated in the study, the data were collected postpartum, but the data on the drug doses used are based on self-report of women, so there may be a risk of bias in remembering. Vit D results of pregnant women could not be evaluated because they are not included in their files.

CONCLUSION

In conclusion, it is critical for the health of the mother and the fetus to experience a safe pregnancy. For a safe pregnancy process, anemia, Vit D level and avitaminosis status of women should be determined and deficiencies should be eliminated in the light of current guidelines. Therefore, it is recommended to revise the guidelines of TMH, to evaluate the practices in the field and to use the recommended supplements during pregnancy in line with the principles of rational use of medicines.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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