

## IRON AND VITAMIN UTILIZATION IN PREGNANT WOMEN LIVING IN CENTRAL ANATOLIA AND ITS ASSOCIATION WITH THE INFLUENCING FACTORS

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### SUMMARY

**Purpose:** The purpose of this study is to determine the status of vitamin and iron usage and the related affecting factors in pregnancy.

**Materials and methods:** Among patients admitted to Obstetrics and Gynecology polyclinics between April 2011 and October 2011, the questionnaire was conducted to 300 pregnant women who agreed to participate in the study by an interviewer nurse with the help of face-to-face meeting.

**Results:** The level of iron and vitamin usage in the patients included in the study was 78.3%. The use of iron and vitamin was found higher in housewives and the group with a high level of income ( $p<0.05$ ). It was determined that the level of iron and vitamin usage in those with nausea and vomiting related with pregnancy reduced significantly ( $p<0.05$ ). The rate of medicine usage was found as significantly lower in smoker pregnant ( $p<0.05$ ). The level of drug usage was observed substantially lower in smoking pregnant women ( $p<0.05$ ).

**Conclusions:** It was ascertained that the use of iron and vitamin in pregnancy was associated with nutritional status, personal habits and socio-economic level. As a result, the use of iron and vitamin in pregnant can be increased by giving a more detailed and individualized antenatal care.

**Key words:** iron, vitamin, pregnancy, socioeconomic status

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## ORTA ANADOLU'DA YAŞAYAN GEBELERDEKİ DEMİR-VİTAMİN KULLANIMI VE BUNU ETKİLEYEN FAKTÖRLER

### ÖZET

**Amaç:** Bu çalışmanın amacı gebelikte vitamin ve demir kullanım durumunu ve buna etkili olan faktörleri saptamaktır.

**Gereç ve yöntemler:** Kadın Hastalıkları ve Doğum Polikliniğine Nisan 2011-Ekim 2011 arasında başvuran hastalar arasından çalışmaya katılmayı kabul eden 300 gebe kadına anketör hemşire tarafından yüz yüze görüşme yöntemi ile anket uygulandı.

**Bulgular:** Çalışmaya dahil edilen hastalarda demir ve vitamin kullanım düzeyi %78.3'tü. Demir-vitamin kullanımı ev hanımlarında ve aile gelir düzeyi yüksek grupta daha fazla bulundu ( $p<0.05$ ).

**Sonuç:** Gebelikte demir-vitamin kullanımının beslenme durumu, kişisel alışkanlıklar ve sosyoekonomik düzey ile ilişkili olduğu saptanmıştır. Sonuç olarak gebelere daha ayrıntılı ve kişiye özgü antenel bakım verilerek gebelerin vitamin ve demir kullanımı artırılabilir.

**Anahtar kelimeler:** demir ve vitamin kullanımı, gebe

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## INTRODUCTION

Pregnancy is a period during which the necessity of adequate and balanced nutrition increases. In this period, insufficient nutrition and malnutrition affect maternal and fetal health adversely<sup>(1,2)</sup>. World Health Organization (WHO) stated in a study performed between the years of 1993 and 2005 that 42 % of the pregnant women throughout the world had anemia due to iron deficiency. In the same study, 90 % of the women with anemia were expressed to live in African and Asian countries. The necessity of iron during pregnancy increases with fetal growth depending on the increment in construction of the red blood cells<sup>(2)</sup>. Moderate and severe anemias in pregnant women enhance the risk of death<sup>(3)</sup>. Moreover, iron deficiency anemia in infants has negative effects on neurological and mental development in long term. The deficiency of some vitamins during pregnancy cause serious health problems especially in infants. For example, vitamin A deficiency damages the immune functions while the lack of B12 leads to insufficiency in neural development<sup>(4)</sup>. Similarly, a relationship has been found between the deficiency of folic acid and the development of neural tube defect<sup>(5)</sup>. The levels of all these vitamins and minerals are closely related with the amounts which are taken by mother<sup>(2,4)</sup>. The supplement of iron and folic acid during pregnancy decreases neonatal mortality by alleviating the risk of birth asphyxia and premature birth<sup>(6,7)</sup>. WHO recommends the use of iron and folic acid during pregnancy. Increasing the cost a little, multivitamin supplement is given in most of the developing countries instead. The effects of multivitamin supplement during pregnancy to the perinatal results have still been discussed<sup>(8)</sup>. The purpose of this study is to investigate particularly the levels of iron, folic acid and also multivitamin usages and possible factors to be able to affect it in pregnant women in the city center and around Yozgat which is situated in Middle Anatolia.

## MATERIAL AND METHODS

A total 300 pregnant women who applied to the clinic between April 2011 and October 2011 were included in the study after getting the approval of ethical committee. The questionnaire (Enc.1) prepared before

and consists of 21 questions was executed by means of face-to-face method by an interviewer nurse. In the questionnaire, age, educational status, smoking cigarette, occupation, monthly family income, family structure, whether the pregnancy is planned or not, the use of iron and vitamin, nourishment status during the pregnancy, and whether they have nausea and vomiting were asked.

### Statistical analyses

The reliability of the questionnaire was assessed by using Cronbach's alpha coefficients ( $\alpha$ ). Cronbach's coefficients range between 0 (weak reliability) and 1 (perfect reliability). We considered the 0.7 cut-off as indicating acceptable internal consistency for research purposes.  $\alpha \geq 0.8$  shows good internal consistency and high reliability. Statistical Analyses were computed by using Statistical Package for Social Sciences (SPSS 17.00, SPSS Inc., Chicago, IL, USA) program. Numerical variables were stated as average  $\pm$  standard error, as for classified variables, they were stated as numbers and percentages. After distribution tests were applied to all the variables, the perpetual variables appropriate with normal distribution were compared with student-t test, and the variables not appropriate with normal distribution were compared with Mann-Whitney U test. As for the classified variables, chi-square ( $\chi^2$ ) test was applied for them. While the analyses were being evaluated,  $\alpha$  level of significance was accepted as 0,05 ( $p < 0,05$ ).

## RESULTS

Among the patients who were included in the study, the frequency of using iron-vitamin was found as 78.3 %. It was determined that 11.3 % of them only iron, 49.3 % of them only vitamin, and 17.7 % of them used iron and vitamin together. The use of iron-vitamin under the age of 25 was 37.4 %. It was 40.1 % at the age of 26-30, and was 22.5 % over the age of 30. The differences in terms of age groups were statistically significant ( $p=0.008$ ) (Table I). According to their educational levels, 23.3 % of them primary school, 47.1 % of them high school, and 29.5 % of them were university graduates. The high school period was the period in which the use of vitamin was the highest and this difference was not found as significantly different

from the other groups ( $p=0.065$ ). In parallel with increasing educational level, the use of vitamin has not been increasing at the same rate.

**Table I:** The usage of vitamin and iron according to age.

Age	n (%)	UVI* (%)	P value
≤ 25 yaş	128 (% 42.7)	84 (37.4)	p=0.008
26-30 yaş	109 (% 36.3)	92 (40.1)	
>30 yaş	63 (% 21.0)	51 (22.5)	
Total	300	227	

\* UVI means usage of vitamin and iron.

The 98.7 % of the patients were not on diet. The 42.3 % of the women included in the study had vomiting and nausea, 25 % of them had nutritional problem. The rate of those who had family income of 500-1000 TL was 14.3 %, and over 1000 TL was 85.7 %. The 75.3 % of the participants were housewives (226/300), and 24.7 % of (74/300) them were working. The use of vitamin was more common among the housewives. Compared with the working group, this difference was statistically significant ( $p=0.002$ ). The use of vitamin of those who live in small family (%78) was more common than those living in big family (%22), however, this difference was not statistically significant ( $p=1.00$ ). The 78.2 % of the patients whose monthly income was over 1000 TL were taking vitamin supplement. The rate of using vitamin supplement in those who had 500-1000 TL monthly income was 58.1 %. Vitamin usage was significantly higher in the patients whose monthly income were better than the women who had less income ( $p=0.04$ ).

The use of iron-vitamin in those who had nausea-vomiting and malnutrition was significantly significant

low ( $p=0.034$ ,  $p=0.028$ ). The rate of using supplement in planned pregnancies was much higher than not planned ones. The difference was not statistically significant ( $p=0.643$ ). There was no significant relationship between the previous type of delivery (normal delivery or caesarean section) and iron-vitamin usage ( $p=0.230$ ). The rate of not using supplementary medicine in their previous delivery and not using vitamin and iron was 72.3 %. The average weight gain in the patients using vitamin and iron was more than the ones not using medicine, and this difference was statistically significant ( $p=0.010$ ). The level of iron and vitamin usage in smokers was significantly much lower than non-smokers ( $p=0.038$ ) (Table II).

## DISCUSSION

As well as the increase in needs of protein and energy in pregnancy period, the necessity of thiamine, riboflavin, folate, C, A, D vitamins and some minerals such as iron and calcium also increased. All the necessities except iron can be met with a balanced nutrition<sup>(9)</sup>. However, in pregnancy, the deficiency of iron and vitamin extensively emerges in case of chronic infection or insufficient intake of them. As a consequence, the World Health Organization reports that iron deficiency anemia in pregnancy is an important public health issue in developing countries<sup>(1,8,10)</sup>. Multi-vitamin supplements including folic acid in periconceptional period decreased neural tube defects, congenital heart diseases, urinary system abnormalities, hydrocephalus, cleft palate and/or lip, pediatric brain tumors and leukemia<sup>(9)</sup>. Nevertheless, routine multi-vitamin supplement is controversial. However, in

**Table II:** The association between family income, previous delivery, smoking, pregnancy, job and type of family.

		Vitamin and iron utilization n(%)	Vitamin and iron nonutilization n(%)	P value
Previous delivery	NVD	156 (%72.2)	60 (%66.6)	P=0.230
	C/S	71(%27.7)	13 (%33,3)	
Smoking	Yes	22 (%9.7)	2 (%2.7)	P=0.038
	No	205 (%90.3)	71 (%97.3)	
Pregnancy	Planned	174 (%76.7)	63 (%86.3)	P=0.643
	Nonplanned	53 (%23.3)	10 (%13.7)	
Job	Housewife	161(%70.9)	65 (%89)	P=0.002
	Profficiency	66 (%29.1)	8 (%11)	
Type of family	Big family	50 (%22)	19 (%26)	P=1.00
	Small family	177 (%78)	54 (%74)	
Total		227	73	

adolescent pregnancies with lower income, routine multi-vitamin supplement can be suggested in the beginning of second trimester<sup>(7,9,11)</sup>. In our study, the use of iron in pregnant women was ascertained as 11.3 %, and the usage of iron and vitamin together was 17.7 %, and the use of only vitamin was found as 49.3 %. The 21.7 % of the patients have not taken any drugs. In another study, this rate was given as 61.0 % for the use of iron, 71.6 % for the use of vitamin<sup>(12)</sup>. This rate has been found slightly higher in our study. But, one fifth of the patients have not taken any drugs. The main reasons of this are nausea, vomiting and poor nutritional habits during pregnancy. The use of iron-vitamin in pregnant women having these complaints has been found significantly lower in our study. The socio-economic level of the family is also very important in this point. It has been determined that the lower income the families have, the more the use of drug decreases. This result has been shown in other studies, too<sup>(13,14)</sup>. We have also found out in our study that weight gain in the pregnant women using iron-vitamin is significantly much more than those who do not take drugs. This can be seen as an effective factor in not taking iron-vitamin.

It has been reported that high school group has got the highest level of iron-vitamin usage, and so the level of iron-vitamin usage has not risen at the same rate in parallel with the level of education. And also, the use of iron-vitamin was found higher among the housewives than patients having job. It has been observed that this result is a different finding from the studies in which the use of drug increases in parallel with the rise of socio-cultural level<sup>(14)</sup>. As a reason for this, it can be thought that the housewives can easily reach to primary healthcare in their region.

In our study, the use of iron-vitamin in the members of the small family is more common than the members of extended families. This is the indicator of the fact that new generations have much more different conscious levels which are affected less by the elders of the family. Furthermore, individual habits have also importance in respect to healthy nutrition. The fact that the use of drug is low in smokers and those who did not use iron-vitamin in their previous pregnancies supports this idea. It was found that the use of iron-vitamin in planned pregnancies was higher than the arbitrary ones, and here the difference was statistically significant. The most important point here is the fact

that providing the supplementary folic acid in pre-pregnancy and the first three months of the pregnancy is effective in preventing neural tube defects and giving this knowledge.

Consequently, the use of iron-vitamin in pregnancy is affected by a number of factors such as; smoking as an individual habit, the level of family income, the occupation of pregnant, and nausea and vomiting during pregnancy. Therefore, to raise the awareness of the risky groups about the problems that baby may have during and after pregnancy related to malnutrition is important. Antenatal services that may be given specific to person will be guiding in using these drugs more effectively and correctly.

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