

# **Anaemia prevalence and its affecting factors in pregnant women of Isparta Province**

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## **Abstract**

Anaemia contributes to both mother and child mortality and morbidity. The purpose of this study is to determine the prevalence of anaemia in pregnant women in Isparta and to identify the socio-cultural-economical impacts of anaemia in the community.

We selected 2040 pregnant women, and they were interviewed in a survey. Only 796 pregnant women voluntarily provided the blood samples for their haemoglobin measurement. Anaemia prevalence was 42.71% for the pregnant women. Furthermore, the haemoglobin level was found to be reduced with increasing age of the pregnant women, number of pregnancies and the gestation age. The studied women were all housewives, with low educational background level and no social security. The results revealed a positive correlation between the haemoglobin level and the frequency of health check-ups, indicating that the more often the women admitted to the health centres the lesser reductions in haemoglobin levels. In short, we suggested that priority should be given to provide education and other social services in on the prevention of pregnancy-induced anaemia.

## **Introduction**

Iron deficient-anaemia is nowadays the world's most prevalent nutritional problem [1-3], particularly during the pregnancy [4,5] And it is one of the most frequent complications related to pregnancy.

Anaemia during pregnancy continues to be a common clinical problem with high rates of prevalence (35 to 75%) in many developing countries [6]. The major concern about the adverse effects of anaemia on pregnant women is a greater risk of prenatal mortality and morbidity for the population [7,8]. Anaemia was previously reported to contribute significantly to maternal mortality [6,9,10] and to both maternal and fetal morbidity [11-13]. Furthermore, anaemia during pregnancy is a risk factor of iron deficiency anaemia for infant [14,15]. It was also reported that an unsolved anaemia can be associated with adverse behavioural and cognitive development of the infant [16].

The prevalence of anaemia is known to be affected by many regional differences in today's world. Many people of developing countries have been living on a monotonous cereal- or legume-based diet and have a little access to animal protein or a variety of fruit and vegetable. Even when such foods are available, some cultural beliefs inhibit the pregnant women not to take such foods which again renders them at a risk of micronutrient deficiencies [17].

Isparta province is located in the Mediterranean region of Turkey. Some important hematological diseases like Thalassemia are common in Turkey [18].

Somehow, there have been very rare studies in Turkey to bring about the anaemia prevalence. Especially in the Isparta region, no studies have so far been carried out in determining the prevalence rate of anaemia in women, particularly during pregnancy. This also indicates that the studies on public health issues have always been lack behind the clinical studies in Turkey. Due to the lack of epidemiological studies, no scientific and technical information are available on the prevalence of anaemia in the region in order to outline its impact on public health.

We know that anaemia is of great importance as a public issue for World's women and pregnant women. We, therefore, aimed to determine the prevalence of anaemia in the region amongst pregnant women in order to 1) bring about the issues related with the anaemic pregnant and 2) help the paediatricians, gynaecologists and all the related practitioners to identify their problems and to easily provide them with the clinical services.

The present study is intended to direct the future epidemiologic and clinical studies provided with the basic information in this field of science.

## **Methods**

A campaign was conducted for a period of 30 days by Isparta Organization of Health Ministry to determine the regional prevalence of anaemia and to educate the pregnant women in order to prevent them from developing anaemia. The campaign was announced

and advertised by a local TV, radio programs, bro-chures and posters to attract the attention of public and to ensure the participation of all pregnant women throughout the region. Therefore, we managed to reach all the pregnant women by assigning all the registered midwives and female nurses to get in a close contact with all the pregnant women throughout the region. During the course of investigation, we have examined 2040 pregnant women, and subsequently they were kindly asked to be admitted at the nearest health centre. In Isparta region there are 18 counties, each have a health centre with sufficient personnel. A questionnaire was administered to women, who came to the research unit by face-to-face interview method. All 2040 women were interviewed personally by specially trained female nurses. In addition, the blood samples were taken from one out of 3 women, who came to the research unit. In the end of study, it was seen that the number of women who freely provided blood samples were 796. Anaemia due to pregnancy was identified with a haemoglobin level of 10.99 g/100 ml and lower [19].

All the data obtained from the study were analyzed using a SPSS 9.0 program (SPSS 9.0 Inc. California, 1999). The correlation and Student's t tests were used to analyze the data.

## **Results**

The average age of the pregnant women was  $24.75 \pm 5.08$  years old (Table 1). The percentage of women who were 20 years old and less was 22.6%. And 5.9% of the pregnant women were 35 and more than 35 years old (Table 2).

Ninety-four percent (94%) of the participants were housewife, 6.3 percent were married for 16 years and over and only 1 pregnant woman was widow. And 10.8% were consanguineous marriages, while 31.7% had no social security.

The highest percentages of females had completed the primary education (78.7%) while only 4.4% of females were literate but did not complete the compulsory primary education or never received the primary education. The percentage of middle or high school graduates was 13.7% whereas only 3.2% were the graduates of higher education.

However, 40.6% of the women have never had their haemoglobin level measured during the present pregnancy whether they have ever admitted to health centres or not. A 7.9% of women had never admitted to a public health centre or clinic. Only 5.3% of the surveyed women stated that they had a regular check-up in a fifteen day interval. 63.8 % had check-up once a month, 7.6% once every two months and 15.4% from time to time. We have found a significantly positive correlation between the time interval of health check-ups and the haemoglobin level ( $P < 0.01$ ).

When we asked them "do you think that having more labour could be the reason for the anaemia during the pregnancy?", 85.3% of the women answered "Yes", 14.2% answered "No" and 0.5% answered "I do not know".

When we asked “could the parasites be a cause of anaemia”, 68.5% responded “Yes”, 20.0% responded “No” and 11.5% responded “I do not know”.

Some important study parameter was presented in Table 1 and the haemoglobin level of pregnant In the study, correlation tests were performed to examine the relationship between the haemoglobin level and the number of successful pregnancies, between the haemoglobin level and the number of curettage, between the haemoglobin level and the number of abortion, between the haemoglobin level and the stillbirth. The results showed that there were statistically no significant correlations between the above variables; the corresponding correlation coefficients were as follows:  $r:-0.058$ ,  $r: -0.038$ ,  $r: -0.052$ ,  $r: -0.043$ , respectively.

**Table 1: Some important study parameters used**

Study parameters (n:2040)	Min	Max	Mean
Age	15.00	44.00	24.75
Gestation age (week)	4.00	41.00	23.18
Height (cm)	61.00	180.00	158.91
Weight (kg)	34.00	129.00	64.28
Number of children	0.00	5.00	0.91
Number of pregnancies	1.00	5.00	2.27
Number of abortions	0.00	3.00	0.25
Number of curettage	0.00	3.00	0.13
Number of stillbirth	0.00	3.00	0.05

Anaemia prevalence in pregnant women

**Table 2: Haemoglobin levels of pregnant women with regard to their age**

Hb, g/100 ml	Age						Total
	15-19	20-24	25-29	30-34	35-39	40-44	
6-6.99			1				1
7-7.99	1	3	3	4	3		14
8-8.99	4	20	12	3	2	1	42
9-9.99	13	33	29	16	4	2	97

10-10.99	21	81	48	20	13	3	186
11-11.99	22	96	69	26	13		226
12-12.99	25	64	37	16	3		145
13-13.99	8	15	21	10	3		57
14-14.99	5	8	8				21
15-15.99	1	4	1	1			7
Total	100	324	229	96	41	6	796

women with regard to the age of women in Table 2.

Statistically significant negative correlations were determined between the haemoglobin level and the age of pregnant women, the haemoglobin level and the gestation age and between the haemoglobin level and the number of pregnancies as follows:  $P < 0.05$ :  $r = -0.084$ ,  $P < 0.01$ :  $r = -0.111$ ,  $P < 0.01$ :  $r = -0.105$ , respectively. From a detailed examination of Table 2, it could be seen that the anaemia prevalence (haemoglobin level 10.99 g/dl and below) was progressively increased by increasing the age of pregnant women. The anaemia prevalence was 42.28, 41.9, 40, 44.8, 53.6 and 100% in the age groups of 15 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39 and 40 to 44 age old, respectively. Similarly, the anaemia prevalence significantly increased by increasing gestational ages. The anaemia prevalence was 39.1, 40.1 and 48.6% at the first, second and last trimester, respectively. Additionally, the anaemia prevalence increased by increasing the number of pregnancies as follows: 40.6, 41.0, 43.8, 52 and 55.5% for the women who were in 1st, 2nd, 3rd, 4th and 5th pregnancies, respectively.

In the study, the mean haemoglobin level was  $10.76 \pm 1.66$  g/100 ml. The mean haemoglobin level was  $10.73 \pm 1.70$  g/100 ml for the pregnant women who are the primary school graduates,  $10.75 \pm 1.35$  g/100 ml for the high school graduates, and  $11.09 \pm 1.50$  g/100 ml for the university graduates, indicating that no significant relationships were observed between the education status and the haemoglobin level.

The anaemia frequency, measured by haemoglobin level, of pregnant women in the region was 42.71% (10.99 g/100 ml and under) [Table 2]. The percentage of women having a haemoglobin level of 11.99 g/100 ml and under was also 71.1% [Table 2].

## Discussion & Conclusion

Mean age of women in our study was 24.75 years old. The average number of children per women was 0.91, whereas the average number of children per women of all age groups was 2.22 and increased to 4.86 in the age 45 and 49 in Turkey [20].

Although in 1985, the percentage of illiterate women in Istanbul, the most developed region of Turkey, was 20%, yet no illiterate pregnant women so far detected in the

present study yet there were some who could not even complete the compulsory level of education (primary school). However, this drastic reduction of illiteracy since 1985 is nothing but a success of the nation-wide literacy campaign.

It is reported that health risk for both the mother and child coexists when pregnancy occurs before the age of 20 and after the age of 35 years [21,22]. Present study however, revealed that 22.6% of pregnant women were 20 years of age and under, and 5.9% were 35 years and more. This may indicate that the women participated in this study might have face some kind of social, economic and cultural problem which have compelled them to get married at an early age.

In the study we have also documented that 94% of the pregnant were housewives, a high percentage. These women are of important source of agricultural labour, not getting paid and have no social security since they have been traditionally treated as family workers in Turkey [20]. This could be a possible reason for women having health problem during their pregnancy.

Worm infestations and intestinal protozoa infections are responsible for many cases of anaemia and gastrointestinal upset [23,24]. In Turkey, worm infestations are common, the possible lack of knowledge about the role of the parasites in developing anaemia during pregnancy could likely be the cause of an increased prevalence of anaemia in pregnancy. Therefore, the lack of knowledge could cause to difficulty to solve the causes of anaemia.

The anaemia prevalence as determined by measuring blood haemoglobin levels was found to be 42.71% in the pregnant women of South-West of Turkey. We did not find any reports on the anaemia prevalence in the present region, but a study carried out in South-East of Turkey revealed that the anaemia prevalence of women aged between 19 and 40 is 40% whether the women are pregnant or not [25]. In South-east of Turkey, the higher prevalence rate of anaemia in pregnant women compared to other regions is likely to be due to too low economic and social status. Nevertheless, our findings are in a good agreement with the previous reports of Kilinc et al [25].

It is confirmed that the women participated in our present study had no appropriate knowledge on anaemia. Therefore, the consciousness and awareness are very much essential in such circumstances. We have already found from the present study that an increased number of pregnancies, women age and gestational age caused a high anaemia prevalence. It was moreover noted that a high percentage of pregnant women who have never had their blood haemoglobin measured whether they were admitted to health centres or not, clearly indicated that the education level of pregnant women plays a very important role in the identification and solution to anaemia. On the other hand, most of the women were house-wives and, 31% had no social security. Illiteracy –bound ignorance possibly deprived the pregnant women to avail the from public health services. Moreover; un-availability of nearest health centres and dependency of women on their husbands obviously restrict the women to get an easy access to the health organizations in the region, consequently, anaemia becomes a serious problem in pregnant women in the

region. It is therefore, suggested that the pregnancy-related anaemia and its possible causes are to be identified and addressed to the paediatricians, gynaecologists and all the related practitioners.

Our study indicates that the high incidence of anaemia can be reduced in the pregnant women even if they receive their health examination at least once in the whole gestational period. The health care services are therefore the important means for keeping pregnant women free from anaemia. An effective intervention is also justified to control anaemia. Moreover, regional campaign needs to be organized to boost the nutritional awareness of the pregnant women.

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