

HEMOGLOBIN LEVELS IN AN OBSTETRIC POPULATION IN ISFAHAN, IRAN*

M. Moshirfatemi, MD., M. Faghihi, MD
M.R. Salimi, MD., A. Banan, MD. and Khatibi A.R., MD.

ABSTRACT

Hemoglobin values in 9550 mothers delivered in the OB. & GYN. dept. of Amin medical center are studied. Hemoglobin levels of less than 11gr./100ml. which is usually considered to be to the lower limit of normal for pregnancy were found in 2410 patients (25.3%) this rate has been recorded to be 15-30 percent in the U.S.A., 36 percent in Western Venezuela, 57.4 percent in India and about 80 percent in Bengali.

In 4740 individuals (49.6%) the hemoglobin levels were below 12gr/100ml. which is similar to the rates recorded for American women.

The rate of anemia somewhat rises in our series with increasing number of pregnancies.

INTRODUCTION

Anemia is a world wide complication of pregnancy(1-2-3-4-5-6). In the United States, anemia has been recorded in about 10-60 percent

* The department of OB. & Gyn., Pathology and Medicine, School of Medicine, University of Isfahan, Iran.

of pregnant women according to different series (5-7-8), this rate has been estimated to be about 36 percent in western Venezuela,⁽²⁾ 57.4 percent in Southern India,⁽⁶⁾ and 40-80 percent in Bengali.⁽⁵⁾

The purpose of this communication is to study the incidence of anemia in a group of pregnant women delivered in the Amin Medical Center of Isfahan University.

MATERIALS AND METHODS

The study is based upon analysis of hemoglobin levels obtained on more than one occasion before or during delivery in a total of 9550 mothers delivered in the Ob. Gyn. Dept. of Amin Medical center during the five from 1970 to 1975.

Most of the patients were from families of relatively low socioeconomic level.

Hemoglobin was estimated by the Cyanmethaemoglobin Method with a photoelectric colorimeter.

Patients in whom anemia was first diagnosed after an antepartum hemorrhage and those whose pregnancies terminated before 28 weeks have been excluded from the study.

In order to analyse the results the patients were divided into three groups as follows:

1. Primipara
2. Multipara with 2-5 deliveries and,
3. Multipara with more than 5 deliveries.

RESULTS:

A hemoglobin concentration of less than 10 gr per 100ml. was found in 1180 (11.3%) of the pregnant women and this value was arbitrarily taken by «W.H.O. Scientific group on nutritional anemias» as indicating anemia.⁽⁶⁾ Hemoglobin levels below 11gr/100ml were found in 2410 (25.3%), and levels of less than 12 gr/100ml. in 4740 (49.6%).

The incidence of anemia had risen with increasing number of previous pregnancies.

Hemoglobin levels of the total series are shown in Fig. 1-. The age distribution of the patients are summarized in table 1. The relationships between anemia and parity status are shown in Figs 2-3 and 4.

Table 1. Shows the age distribution of the patients with various hemoglobin levels in the total series.

Maternal-Age	Hb. less than 8gr per 100ml.	%	Hb. 8-10 gr/100ml.	%	Hb. 10-11 gr/100ml.	%	Hb. 11-12 gr/100ml.	%	Hb. 12-14 gr/100ml.	%	Hb. More than 14 gr/100ml.	%	Mean \pm S.D. Hb gr/100ml.
19 years & less	20	14.3	380	32.2	260	23.9	790	33.9	1062	26.7	286	34.5	12.07 \pm 1.72
20-29 years	80	57.2	430	36.4	410	37.6	760	32.6	1328	33.4	274	33	11.70 \pm 1.75
30-39 years	40	28.5	320	27	400	36.7	630	27	1214	30.5	198	24	11.54 \pm 1.65
40 years and more	0	0	50	4.4	20	1.8	150	6.5	376	9.4	72	8.5	12.1 \pm 1.38
Total	140	100	1180	100	1090	100	2330	100	3980	100	830	100	11.79 \pm 1.68

Fig. 1- Shows the range of hemoglobin levels in the total series.

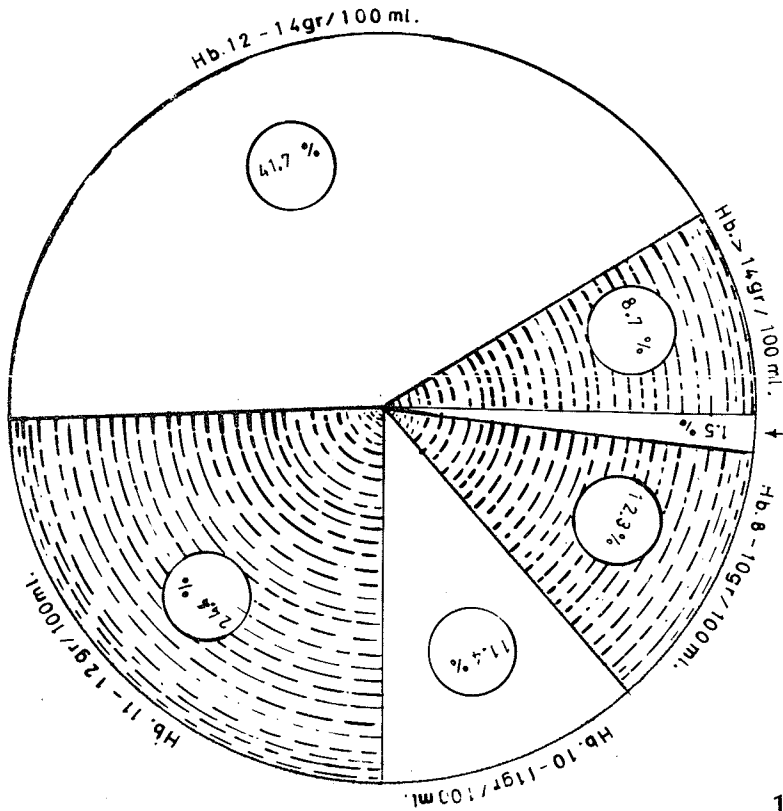


Fig. 2- Shows the range of hemoglobin levels in 3195 primipara patients.

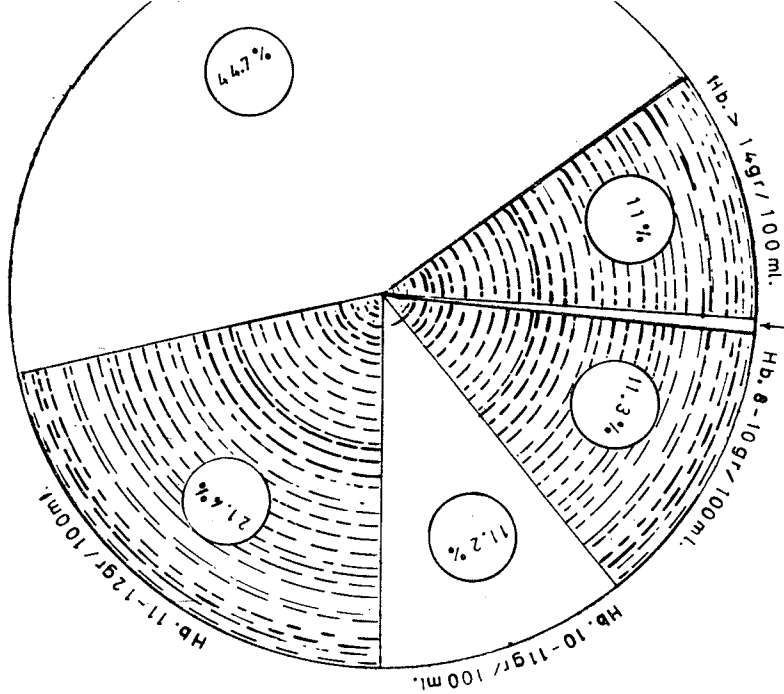


Fig. 3- Shows the range of hemoglobin values in 3207 multipara patients with 2-5 parities.

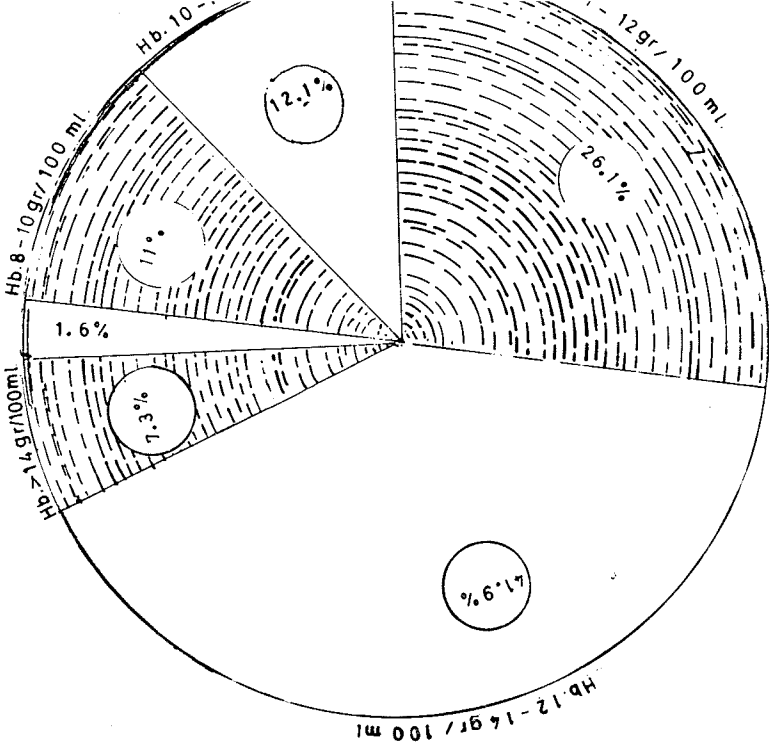
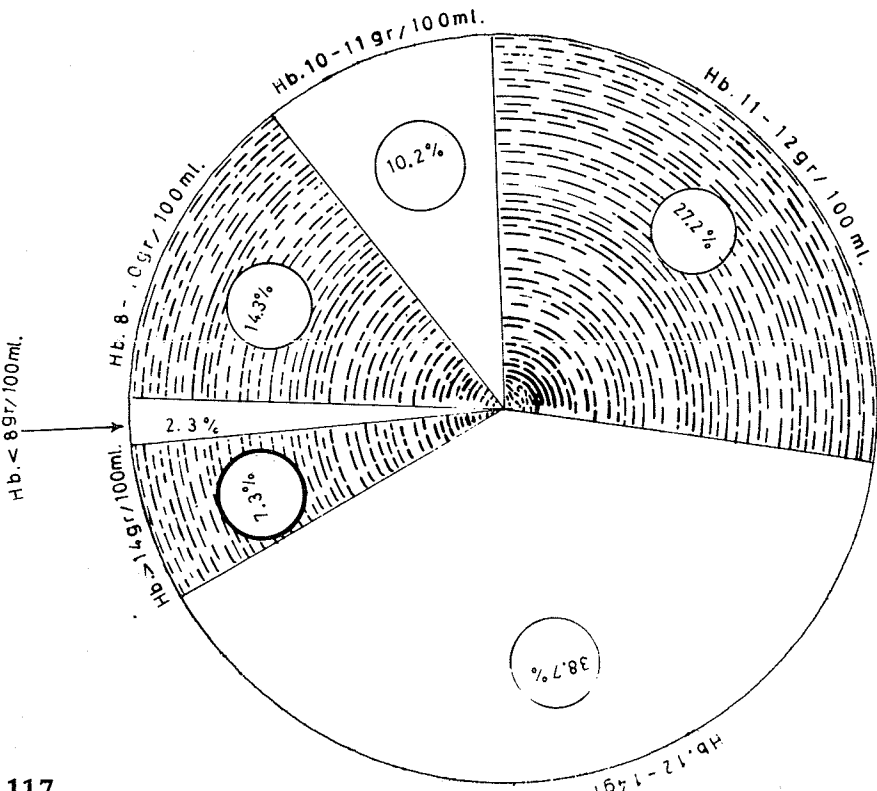


Fig. 4- Shows the range of hemoglobin values in 3146 patients with more than 5 parities.



COMMENTS:

Iron deficiency has commonly been accepted as the most common cause of anemia in the world.⁽¹⁻⁷⁻⁹⁾ And this is particularly true in pregnant women, therefore most of the anemic women in our series can be considered as iron deficient, other nutrient deficiencies seem to be of less clinical importance.⁽⁷⁾

The most commonly used biochemical methods for evaluating iron status are those which demonstrate the presence or absence of anemia.⁽⁷⁾ These include determination of hemoglobin concentration, hematocrit or red cell count⁽⁷⁾. It should be mentioned that there is not always agreement about what constitutes anemia. The estimated prevalence of anemia in a population sample depend upon the parameter employed, whether it be hemoglobin concentration or hematocrit. The hemoglobin and hematocrit values used for separation of anemic and non-anemic individuals have not always been uniform and the problem of what are «normal» and what are «abnormal» values has not been completely resolved.

In our series about 25.3 percent (2410 individuals) of pregnant women had hemoglobin concentrations of less than 11 gr/100ml. which, this value usually been considered to be the lower limit of normal for pregnancy (2-6-7-8).

This rate has been recorded as 15-30 percent in U.S.A⁽⁸⁾ 36 percent in western Venezuela,⁽²⁾ 57.4% in India⁽⁶⁾ and about 80 percent in Bengali⁽⁵⁾.

Some authors believe that the lower limit of hemoglobin concentration in pregnant women should not be less than 12gr per 100ml.⁽¹⁰⁾ hemoglobin levels of less than 12gr per 100ml. were found in 4740 (49.6%) of our series which is closely similar to the rate reported by Benjamin and associates⁽¹⁰⁾ who studied 1,052 pregnant women at New York hospital and found the hemoglobin levels below 12gr/100ml. in 49.1 percent of the patients, this rate is as high as 82 percent or more in some countries.⁽⁶⁾

As was mentioned above incidence of anemia rises with increasing pregnancies, usually these women return to near normal values after delivery, but because of severe reduction of iron stores they will easily deteriorate and become anemic again under stress conditions. According

to «White» (7) «Darly pointed out that: in a study of approximately 2,300 pregnancies, there was no difference during the first year of life between infants born to mothers with 10gr or less hemoglobin and those born to mothers with the highest hemoglobin concentration». Placental hypertrophy is usually seen in the patients with sever anemia (4).

A posible relationship between anemia and toxemia of pregnancy has been postulated (II).

Surveys over the past years have shown that American women have average iron intakes in the order of 10 to 11 mg. per day which is only 55-60 percent of the recommended dietary allowance for all females from 10 to 55 years of age. Regarding to the fact that a great proportion of all foods of the world are consumed in the U.S.A. the lower iron intake of the women in other parts of the world can be expected.

Most of the pregnancy anemias can be treated or prevented by iron administration during pregnancy, but if these were the only segment of population demonstrating a need for more iron then preventive measures could be directed to this group. However, the recent studies suggest that may non anemic girls and women are iron deficient (1-9). Thus it can be recommended that more information about iron needs and iron rich foods be given to the population. Fortunately iron is simply available and foods can easily be enriched if necessary.

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