

# Study on Genetic and Non-Genetic Anemia Poverty Types and Their Relationship with Residential Areas

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## ABSTRACT

Anemia is the most common pathological condition in hematology. There are more than 400 types of anemia, can be divided into three main types: anemia caused by blood loss as in people with ulcers and hemorrhoids, during menstruation, at birth and anemia caused by dysfunction in the production of erythrocytes that occurs due to red blood cell damage this is called hemolytic anemia, and iron deficiency anemia is the most common type of anemia at all. Through the results obtained from the Al-Hussein Teaching Hospital in the holy province of Karbala for the year 2018, found 152 cases, of which cases were males by (60.53%) and (60) cases were females by (39.47%). Thus, the incidence of females is lower than that of males. The number and percentage of anemia for each age group shows that the highest age group is (21-30 years) with (43) and (28.3%). The lowest age group was (+60) with (8) and (5.27%), the number of males infected (6) by (3.94%) and the number of females (2) by (1.31%). Types of anemia recorded in the research were hereditary and non-hereditary (other types)—hereditary number (14) by (9.21%). Types of hereditary anemia recorded were Thalassemia and Sickle by number and percentage respectively (9) and (5) by (5.92%) and (3.28%), The number and percentage of males and females of the two species, respectively, males (4) and (2) by (2.63%) and (1.31%), females with (5) and (3) by (3.28%) and (1.98%), The rate of hereditary anemia in males is higher than in females. Non-hereditary anemia was (138) by (90.79%), which is higher than hereditary anemia. The types of non-hereditary anemia recorded are six types (nutritional, hemorrhagic, inflammatory, tumor, immune and renal failure). In the residential sectors, the highest incidence was recorded in the center sector (90), (59.22%), while the lowest incidence rate was in the AL-huor sector (10), (6.57%). We concluded from the study that the incidence of males is higher than females and that the higher incidence was in the AL-center sector, which increased the disease in urban areas and less in rural areas.

**Keywords:** Anemia, Genetic, Non-genetic, Relationship, Residential areas, Types.

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## INTRODUCTION

Anemia is a word derived from the Greek language meaning bloodless (a condition that occurs due to low concentration of hemoglobin from the normal level).<sup>1-3</sup> In non-pregnant adult females, less than (11 g/dL), in adult males are less than (13 g/dL).<sup>4,5</sup> Many people consider anemia is a disease, but the truth is a symptom of the disease, and it is essential to know the disease to be properly treated.<sup>5</sup> There are more than (400) types of anemia, and can be divided into three main types<sup>6</sup>: blood loss anemia, as in people with ulcers, hemorrhoids, menstrual periods, at birth,<sup>7</sup> anemia caused by defective red blood cells,<sup>8</sup> anemia caused by damage Red blood cells are called hemolytic anemia, and iron deficiency anemia is the most common type of anemia.<sup>9,10</sup>

Anemia is the most common disease condition in blood diseases.<sup>7</sup> In the United States, the disease affects more than (3.5) million Americans, women, and people with chronic diseases may be at higher risk for anemia.<sup>4</sup> The condition of anemia is due to the decline in the level of hemoglobin, so the devices suffer from not getting enough oxygen,<sup>3,10</sup> and therefore complain of patients from symptoms of fatigue, headaches, lack of concentration and lethargy and others.<sup>11,12</sup>

There are many classifications for anemia, but the most common and clinically important classifications are the mean corpuscular volume (MCV), which is one of the variables in the overall blood count. It is used to differentiate between types of anemia, and the average normal size of the red ball is between (80–98) Femto Lite.<sup>13,14</sup>

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Causes of anemia: Some forms are hereditary and can affect children from the moment of birth.<sup>1,2</sup> Women after puberty are exposed to a form of anemia called iron deficiency anemia due to loss of blood with menstruation, and the condition can develop with increased demand by the fetus on the minerals of the blood during pregnancy. Older people may be more susceptible to anemia due to malnutrition and other medical conditions.<sup>5,15</sup>

The most common symptom of anemia or anemia: feeling tired, loss of energy, rapid heartbeat, especially in the exercise, shortness of breath, headache, the difficulty of concentration, dizziness, yellowish skin color, insomnia, muscle strain of the leg, and thinning nails.<sup>7,8,11</sup>

**MATERIALS AND METHODS**

The research was designed on the basis of statistical data collected from the Ministry of Health/AL-Hussein Educational Hospital in the holy province of Karbala. The number of cases of anemia was (152) cases in (2018) year. They were divided by age, gender, and residential sectors, and the type of anemia for all cases. Infected cases were divided into six groups by age group for both sexes, as shown in Table 1.

Table 1: shows people with anemia are divided into six groups by age groups from (10–20) years to the first group and more than (61) years to the sixth group.

**RESULTS**

The results obtained for cases of anemia from Al Hussein Hospital for both sexes were (152) cases, of which (92) male cases (60.53%) and (60) female cases by (39.47%), thus the incidence of females less than males as shown in Table 2.

**Table 1:** Shows the groups of peoples with anemia by the age of group

Age of group	Number of injured	The ratio %
(10–20) years	29	19.07
(21–30) years	43	28.3
(31–40) years	38	25
(41–50) years	17	11.18
(51–60) years	17	11.18
(≥ 61 ) years	8	5.27
Total	152	100%

**Table 3:** Shows the number and the percentage of peoples with anemia for each age group by sex.

Age of group	Injured male	The ratio %	Injured female	The ratio %	Total	The ratio %
( 10 – 20) years	17	11.18	12	7.89	29	19.07
( 21 – 30) years	29	19.07	14	9.21	43	28.3
( 31 – 40) years	23	15.13	15	9.85	38	25
( 41–50) years	8	5.27	9	5.94	17	11.18
( 51–60) years	9	5.94	8	5.27	17	11.18
( ≥ 61 ) years	6	3.94	2	1.31	8	5.27
Total	92	60.53	60	39.47	152	100%

**Table 4:** Shows the number and percentages of the types of anemia for both sexes

Type of anemia	Injured male	The ratio %	Injured female	The ratio %	Total	The ratio %
Hereditary	6	3.94	8	5.27	14	9.21
Non-hereditary	86	56.59	52	34.20	138	90.79
Total	92	60.53	60	39.47	152	100%

Table 2 shows the total number of anemia for both sexes and the number, percentage of each sex.

The results of Table 3 show the number and the percentage of anemia for each age group, the highest number and percentage of anemia in group-age (21–30 years) in number (43) by (28.3%), the number of males infected (29) by (19.07%) while the Females (14) by (9.21%), the second category was the age group (31-40 years) with (38)by (25%), the number of males infected (23) by (15.13%) and the number of females (15) by (9.85). The third degree was the age (10-20 years) number (29) and the proportion (19.07%), the number of males infected (17) by (11.18%) and the number of females (12) by (7.89%), the results of the two age groups (41–50 years) and (51–60 years) were equal in number (17). The proportion (11.18%), the numbers and proportions of both males and females for the two groups were (8) and (9) by (5.27%) and (5.94%) respectively, while the females (9) and (8) by (5.94%) and (5.27%) respectively. The lowest age group was (+60) with (8) by (5.27%), the number of males infected (6) by (3.94%), and the number of females (2) by (1.31%), as shown in Table 3.

Table 3: shows the numbers and percentages of anemia for all age groups showing the highest and lowest infected rates

The results of the anemia recorded in Al-Hussein Teaching Hospital were hereditary and non-hereditary (other types). The number of males genetically infected (6) by (3.94%) and females (8) by (5.27%). Types of hereditary anemia recorded were Thalassemia and Sickle by number and percentage respectively (9) and (5) by (5.92%), (3.28%), the number and percentage of males and females for the two species respectively, for males (4) and (2) by (2.63 and 1.31%), females with (5) and (3) by 3.28 and 1.98% Hereditary anemia in males is lower than in females.

Non-hereditary anemia was (138) by (90.79%), which is higher than hereditary anemia, the number of males infected (86) by (56.59%) and the number of females infected (52) by

**Table 2:** Shows the number and percentage of peoples with anemia by sex

Sex	Number of injured	The ratio %
Male	92	60.53
Female	60	39.47
100%	152	Total

(34.20%), thus the proportion of non-hereditary anemia in female less than that of males, this is the opposite of hereditary anemia, as shown in Tables 4 and 5.

Table 4 shows types of hereditary and non-hereditary anemia for both sexes.

Table 5 shows the types of hereditary anemia (thalassemia and sickle) for both sexes.

The types of non-hereditary anemia recorded were six types (food, hemorrhagic, inflammatory, tumor, immune and renal failure) were number and percentage respectively 30, 25, 38, 19, 11, 15 by 19.75, 16.45, 25, 12.5, 7.24 and 9.85% as shown in Table 6.

Table 6 shows the numbers and percentages of non-hereditary anemia.

Results of anemia in the residential sectors, the highest percentage of incidence was recorded in AL- center sector (90) by (59.22%), then the sector of AL-Husseiniya and AL-hindia sector respectively (31), (21) by 20.39 and 23.82%. The lowest incidence was in AL- huor sector (10) by 6.57% as shown in Table 7.

Table 7 shows the numbers and percentages of people with anemia by residential sectors and shows that the highest incidence was in the city than in rural areas.

**DISCUSSION**

The subject of the research is a statistical study on anemia for the patients of the AL-Hussein Teaching Hospital in the holy province of Karbala. We were selected for this topic to know its types and what diseases cause it. The shape of the injured person and its effects on the psyche of the injured person.<sup>16,17</sup>

Through the study of the results of the statistical data collected from Al-Hussein Teaching Hospital for the year (2018) for both sexes were (152) cases of which (92) male cases

(60.53%) and (60) female cases (39.47%), thus the incidence of females less in males, this corresponds to [18-20] it is noteworthy that genetic diseases of anemia show signs and symptoms in males, while females are carriers and inherited more than to show infection and does not comply with.<sup>21,22</sup>

The results in Table 1 and 3 show how to divide people with anemia into six groups according to age group. It shows the number and percentage of anemia incidence for each age group, the highest number in age group 21-30 years with (43), the number of males infected (29) by (19.07%) and the number of females (14) by (9.21%), the second category was the age group (31–40 years) number (38) and (25%), the number of males infected (23) by (15.13%) and the number of females (15) by (9.85%), this does not agree with<sup>17,21,22</sup> and the explanation here because these ages of groups are youth groups in society, at this stage young people tend to fast life, modernity, and development, including eating prepared and fast food that is not rich in nutrients leads to a lack of elements responsible for the formation of red blood cells, this is consistent with.<sup>23-25</sup> The third category was the age group (10–20 years) number (29) by (19.07%), the number of males infected (17) by (11.18%), the number of females (12) by (7.89%), this is consistent with.<sup>[21,22]</sup> The equal results of the age groups (41-50 years) and the group (51-60 years) number (17) by (11.18%) , the numbers and proportions of both males and females for the two groups respectively (8) and (9) by (5.27%) and (5.94%), the females (9) and (8) by (5.94%) and (5.27%), while the lowest age group was (+60) number (8) by (5.27%), the number of males infected (6) by (3.94%) and the number of females (2) by (1.31%), this is consistent with.<sup>26,27</sup>

The results of the type of anemia were recorded: hereditary and non-hereditary (other types). Types of hereditary anemia recorded: Thalassemia and Sickle by number and percentage

**Table 5:** Shows the number and percentages of hereditary anemia for both sexes

<i>Hereditary anemia</i>	<i>Injured male</i>	<i>The ratio %</i>	<i>Injured female</i>	<i>The ratio %</i>	<i>Total</i>	<i>The ratio %</i>
Thalassemia	4	2.63	5	3.28	9	5.92
Sickle	2	1.31	3	1.98	5	3.28
Total	6	3.94	8	5.26	14	9.2%

**Table 6:** Shows the numbers and percentages of patients with anemia according to the cause of the anemia

<i>Non-hereditary anemia</i>	<i>Number of injured</i>	<i>The ratio %</i>
Food	30	19.75
Hemorrhagic	25	16.45
inflammatory	38	25
Tumors	19	12.5
Immunofluorescence	11	7.24
Kidney failure and disability	15	9.85
Total	138	90.79

**Table 7:** Shows the number and percentage of anemia by residential sectors

<i>Region/Sector</i>	<i>Number of injured</i>	<i>The ratio %</i>
AL-Center	90	59.22
AL-hindia	21	13.82
AL-Husseiniya	31	20.39
AL-huor	10	6.57
Total	152	100%

respectively (9) and (5) by (5.92%) and (3.28%), the number and percentage of males and females of the two species respectively, for males (4) and (2) by (2.63%) and (1.31%), females (5) and (3) by (3.28%) and (1.98%). The incidence of hereditary anemia in males is less than that of females; this is consistent with [18,22, 28]. While Non-hereditary anemia was (138) by (90.79%), which is higher than hereditary anemia, where the number of males infected (86) by (56.59%) and the number of females (52) by (34.20%), this is consistent with.<sup>20</sup> Table 7 shows the results of anemia in the residential sectors. The lowest rate was (10) by (6.57%), this is due to the nature of the life of the people of the city.<sup>29</sup> More useful than fresh vegetables, fruits and food prepared daily go-ahead and unsaved with preservative materials unlike the countryside son who tends to eat all fresh materials, including dates rich in nutrients which responsible for the formation of red blood cells this is in line with.<sup>30,31</sup>

### CONCLUSIONS

- The study showed that the incidence of males is higher than females.
- The highest infected age group was (21-30) years with (43), and the proportion (28.35) and the lowest infected age group was ( $\geq 61$ ) years with (8) and (5.27%).
- Non-hereditary anemia was higher than hereditary anemia
- The incidence rate was higher in the AI-center sector than in the rural sectors, where the disease increased in urban areas and less in rural areas.

### RECOMMENDATIONS

- Health education for all members of society through audio and visual media about the types of anemia, especially genetic.
- A good diet rich in vitamins, minerals, and salts such as vegetables, fruits, and meat and stay away from poor food with nutrients.
- Stay away from marrying relatives, especially if relatives have genetic blood diseases.
- Treatment of chronic diseases.

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