

## Pattern of anaemia in Fayoum governorate

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**Abstract:** anemia is highly prevalent in Fayoum Governorate, females most commonly affected and IDA is the most common type.

**Introduction:** Anemia is a condition in which the hemoglobin level is below normal and insufficient to meet physiologic needs. The **World Health Organization (WHO), 2011** estimates suggest anemia affects around 800 million children and women, on average, all population groups were above the threshold for mild anemia. So, we aimed to study the pattern of anemia in Fayoum Governorate.

**Patients and Methods:** This real practice study included 1500 patients with different types of anaemia. All patients were subjected to a full medical history, full clinical examination, blood sample for complete blood count (CBC) examination, serum iron, and serum ferritin concentration.

**Results:** This study included 1500 patients having a female predominance with a male to female ratio as (45.47% and 54.53%) respectively. The mean age of patients was 48.9± 18.1 years. Anaemia was more

common in the age group between 50-65 years. Most common associated comorbidities were diabetes mellitus (DM) and hypertension (HTN) by 65.1% and 61% respectively. The most common causes of anemia were chronic kidney disease (CKD), chronic liver disease (CLD), Malignancy by 27.1%, 21.93%, 15.8% respectively.

**Conclusion:** There is more prevalence of anaemia in females in Fayoum Governorate. This prevalence is increasing with age. Here iron deficiency anemia (IDA) is the most common type of anemia in pregnant females. There is a common association between anaemia with diabetes mellitus in absence of CKD.

**Key words:** Anaemia, Fayoum Governorate.

### **Introduction:**

Anemia is a common health concern, especially for premenopausal women and the aging population. A Previous research had shown that anemia can increase the risk of morbidity as well as mortality [1].

The global prevalence of anaemia in 2013 had shown to be a public health problem that affect low-, middle- and high-income countries and had a significant adverse health consequences, as well as adverse impacts on social and economic development [2].

Iron deficiency (ID) is in the top 20 risk factors for the global distribution of burden of disease, and the most common nutritional disorder and the leading cause of anemia in the world [3].

Although the prevalence of anemia was estimated at 9% in countries with high development, in countries with low development the prevalence was 43% (4).

Anaemia is more common in children and women; it increases the risk of maternal and neonatal adverse outcomes. Anaemia affects half a billion women of reproductive age worldwide. Anemia has many aetiologies, manifestations, types and complications [4].

### **Aim of the work:**

The incidence of anemia in Egypt (as developing countries) is much higher than developed countries so the present study was aimed to investigate the pattern of anemia in El Fayoum Governorate in Egypt.

### **Patient and methods:**

This study included 1500 anaemic patients their ages above 18 years, it was conducted

from December 2017 to December 2018. They were recruited from internal medicine outpatient clinics at Fayoum university hospital, Insurance hospital and Fayoum General hospital. All patients were subjected to a full medical history, full clinical examination, blood sample for (if not available) complete blood count (CBC) examination, serum iron and serum ferritin concentration. Other Investigations were asked if indicated (Reticulocytic count, bone marrow aspiration and biopsy, occult blood in stool).

### **Statistical analysis of data:**

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 22 (SPSS Inc, USA). For quantitative data, the **mean** and **standard deviation (SD)** were calculated. **One way ANOVA** was used in comparing between the study groups. Qualitative data were presented as **number** and **percentages**, **chi square ( $\chi^2$ )** was used as a test of significance. For interpretation of results of tests of significance, significance was adopted at **P ≤ 0.05**.

**Results:**

This study was conducted on 1500 anaemic patients, males were 682 (45.47%) while females were 818 (54.53%), With mean age of the study group was  $48.9 \pm 18.1$ SD as shown in table 1, anaemia was highly prevalent in the age group ranged between 50-65 years.

**Table (1): Socio-demographic characteristics of the studied patients.**

Groups	Age	Sex			
		Male (T:682)		Female (T:818)	
	Mean $\pm$ SD	N	%	N	%
<b>Pregnancy</b>	26 $\pm$ 5	-	-		
<b>Bleeding (no trauma)</b>	43 $\pm$ 18	81	11.9%	158	19.3%
<b>Parasites</b>	47 $\pm$ 19	50	7.3%	59	7.2%
<b>Hemolytic</b>	27 $\pm$ 8	31	4.5%	92	11.2%
<b>Malignant</b>	55 $\pm$ 13	87	12.8%	150	18.3%
<b>CKD and CLD</b>	58 $\pm$ 13	52	7.6%	22	2.7%
<b>CKD</b>	55 $\pm$ 15	227	33.3%	105	12.8%
<b>CLD</b>	63 $\pm$ 9	130	19.1%	83	10.1%
<b>Other chronic diseases</b>	47 $\pm$ 20	24	3.5%	32	3.9%

CKD: chronic kidney disease.

CLD: chronic liver disease.

Regarding comorbidities in the studied patients it was found that the most prevalent co morbidity was diabetes mellitus (65.1%) followed by hypertension (61%) as shown in table 2.

**Table (2): Co- morbidities among the studied patients.**

Variable	N	%

<b>DM</b>	<b>977</b>	<b>65.1%</b>
On Insulin	487	49.8
On Oral hypoglycemic	490	50.1
<b>HTN</b>	<b>915</b>	<b>61%</b>
Primary	881	96.3%
Secondary	34	3.7%

DM: Diabetes mellitus.

HTN: Hypertension.

Regarding CKD patients they were 406 (27.1%) patients among them 279 (68.72%) were males and 127 (31.28%) were females.

There were 297 patients suffering from both HTN and CKD which represented (73.15%) of CKD patients and (32.45%) of hypertensives.

In the present study there were 320 patients (21.33%) of those having CKD suffering from DM, HTN

Regarding CLD patients they were 213 (14.2%) patients (without bleeding or renal impairment) among them (40.73%) were HCV infection and (24.1%) were HBV infection there were 12.76% with acute variceal bleeding and 22.49% were suffering from combined CLD and CKD as shown in table 3.

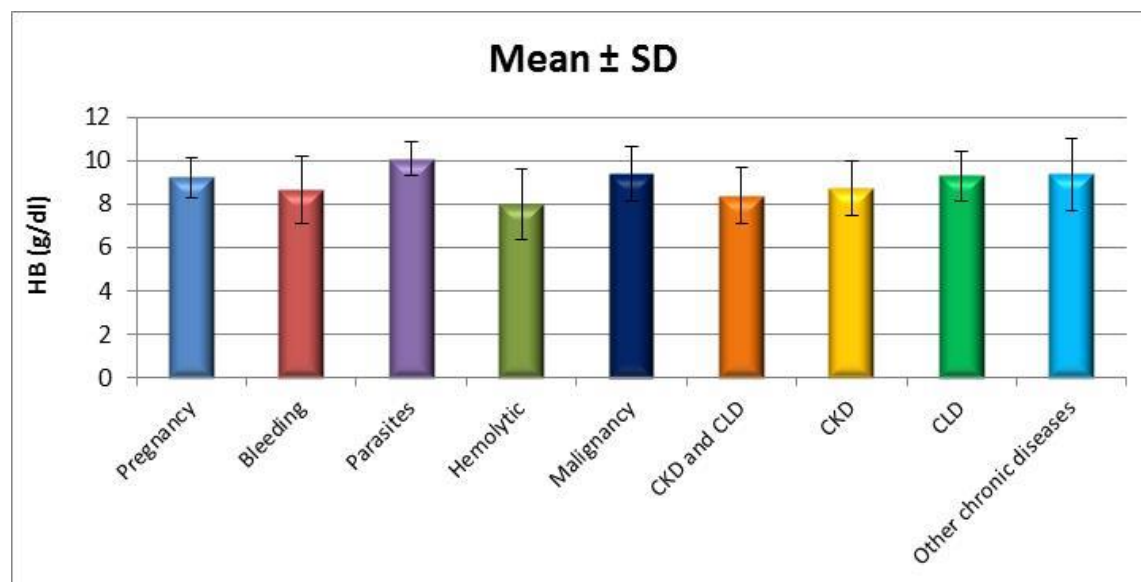
**Table (3): Causes of anaemia among the studied group.**

Variable		N	%
<b>CKD</b>		406	27.1%
HCV -ve N=332 (81.77%)	Hemodialysis	234	70.5
	On Iron and EPO	290	87.3
	On regular transfusion	290	87.3
HCV +ve N=74 (18.23%)	Hemodialysis	60	81.1
	On Iron and EPO	55	74.3

	On regular transfusion	39	52.7
<b>Malignancy</b>		237	15.8%
On chemotherapy		206	86.92%
On radiotherapy		10	4.22%
Not treated yet		21	8.86%
<b>CLD</b>		329	21.93%
HCV+ve		134	40.73%
HBV+ve		79	24.01%
Acute bleeding haematemesis		42	12.76%
CLD + CKD		74	22.49%
<b>Hemolytic anemia</b>		123	8.2%
<b>Others: autoimmune, cardiac</b>		165	11%

CKD: chronic kidney disease. CLD: chronic liver disease. Epo: erythropoietin hormone. HCV: hepatitis C virus. HBV: hepatitis B virus.

In the studied group, the highest mean haemoglobin level were found in the group affected with intestinal parasites by ( $10.08 \pm 0.79$  SD) and the least level were in group of hemolytic anemia by ( $8.01 \pm 1.61$ SD) as shown in figure 1.



**Figure (1): Mean haemoglobin levels with SD among the studied groups.**

## **Discussion:**

This study included 1500 anaemic patients aiming to investigate the pattern of anemia in El Fayoum Governorate in Egypt.

Our results showed that anaemia was highly prevalent in the age group ranged between 50-65 years by 498 (33.2%). Also, we found that the most common comorbidity was DM by 977 (65.1%), followed by HTN by 915 (61%), included patients with CKD 406 (27.1%), with malignant diseases 237 (15.8%), CLD patients were 329 (21.93%) and 564 (37.6%) were active cigarette smokers.

These results are in agreement with **Gandhi et al., 2017** who revealed that a higher prevalence of anemia was associated with advancing age and comorbidities. But the most common co morbidity was the essential HTN represented 59.3%, Diabetes mellitus 19.4%, chronic kidney disease 11.1%, malignancy 18.5 %, chronic liver disease 6.5% and 11.6% were active cigarette smokers <sup>[5]</sup>.

In this study showed females predominance as regarding the sex including (682 were males (45.47%), 818 (54.53%) were females) that was consistent with

**Callera et al., 2015** who found that 35.1% were males and 64.9 % were females <sup>[6]</sup>.

Our results showed that the mean age of  $48.9 \pm 18.1$ SD which is not agreed with **El-Arbagy et al., 2015** who founded that the mean age of the patients was  $44.5 \pm 12.3$  years. The lower mean age in our study may be due to the large number of patients on dialysis <sup>[7]</sup>.

The current study documented that microcytic anaemia was more common than normocytic anaemia in the studied group as 1179 (78.6%) patients had microcytic anemia however 321 (21.4%) only had normocytic anemia with different values of mean haemoglobin levels according to the cause of anemia with the highest mean haemoglobin level were found in the group affected with intestinal parasites by ( $10.08 \pm 0.79$  SD) and the least level were in group of hemolytic anemia by ( $8.01 \pm 1.61$ SD).

This was in agreement with **Sharourou et al., 2018** who found that the most important cause of anemia was iron deficiency anaemia <sup>[8]</sup>.

Also, **Al Hassan., 2015** found that iron deficiency anaemia was the most common type of anaemia represented 81%

with mean hemoglobin concentration for the study sample was  $9.8 \pm 7$  g/dl <sup>[9]</sup>.

Also, **Salama et al., 2016** were agreed with this study as the mean haemoglobin of the anaemic patients was 10.5 g/dl. <sup>[10]</sup>

This was not in line with **Mengesha and Dadi., 2019** who revealed that the most common anemia was normocytic by 52% of anaemic subjects <sup>[11]</sup>. This may be due to the different numbers and characteristics of populations in both studies as their study include only 400 patients who are men and non-pregnant women.

Also, **Zaninetti et al., 2018** stated that chronic inflammation and chronic renal failure were the most frequent causes of anemia <sup>[12]</sup>. This may be explained as Zaninetti study included only hospitalized patients.

**El-Arbagy et al., 2015** disagreed with our results regarding sex with men and women percentage were 65.7, 34.3% respectively <sup>[7]</sup>.

In addition **Portolés et al., 2013** found that the mean age was 65y with range of (24–78), but this study included anemic and non-anemic CKD patients <sup>[13]</sup>.

### **Limitations:**

better include a larger scale of patients.

### **Conclusion:**

There is more prevalence of anaemia in females in Fayoum Governorate. This prevalence is increasing with age. In pregnant females the most common type of anaemia is IDA. There is a common association between anaemia with diabetes mellitus in absence of CKD.

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