# Health Status of β-Thalassemia Patients in the West Bank

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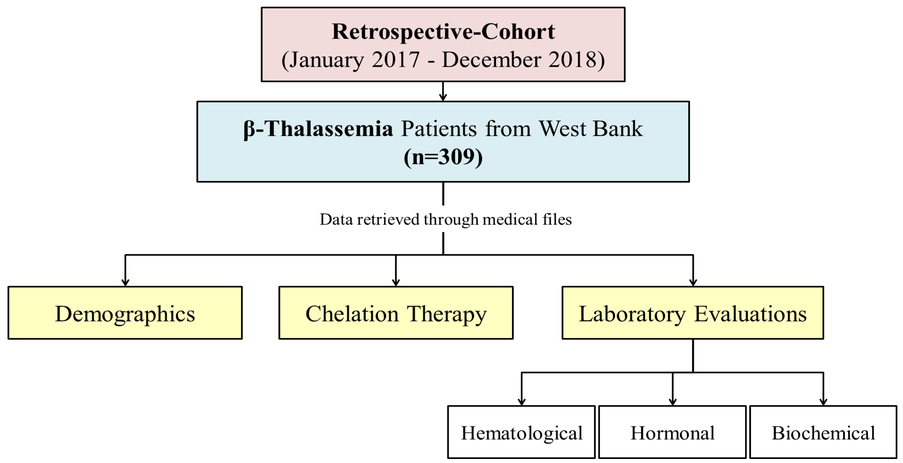
## Introduction

- **β-thalassemia** is a **recessively autosomal** inherited blood disorder characterized by anomalies in the production of hemoglobin beta chain resulting in variable degrees of hemolysis, chronic anemia, and ineffective erythropoiesis.
- In Palestine, there are **more than 150,000 carriers** of β-thalassemia as reported in 2014.
- In 2018, Thalassemia Patients' Friends Society (TPFS) has reported **847 symptomatic thalassemia patients** with a **prevalence of 17.4 / 100,000.**
- Around 70% of Palestinian thalassemia patients are from the West Bank. The geographic distribution of patients in the West Bank is shown in **Figure 1.**
- Only **4%** of thalassemia patients in Palestine received bone marrow transplantation.
- Even though blood transfusion is lifesaving for β-thalassemia patients, it burdens the body with excess iron leading to momentous and irrevocable biological damages.
- In developing countries, management of thalassemia a major challenge.

**Figure 1:** The geographical distribution of β-thalassemia patients in Palestine, 2018


- **Objectives:**
  - Describe **demographic characteristics** of β-thalassemia patients in the West Bank.
  - Evaluate **hematological, biochemical** and **endocrine profiles** and their **correlation with iron overload.**

## Methodology

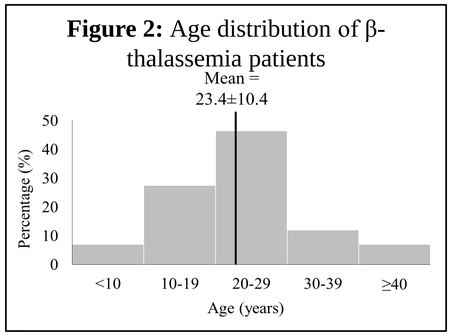



## Results

### 1. Demographic characteristics of β-thalassemia patients:

- Male-to-female ratio 1:1
- Average age 23.4 ± 10.4 years (range: 2-68 years) **(Figure 2)**
- Geographic distribution:
  - North: 63.8%
  - Middle: 10.0%
  - South: 26.2%

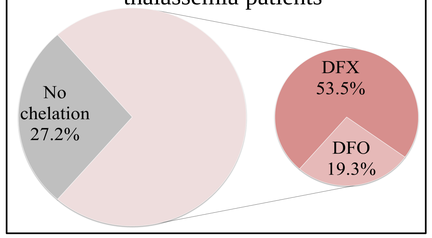
**Figure 2:** Age distribution of β-thalassemia patients




### 2. Iron chelation therapy among transfused patients:

- Only two available iron chelators **(Figure 3):**
  - Deferoxamine (DFO)
  - Deferasirox (DFX)

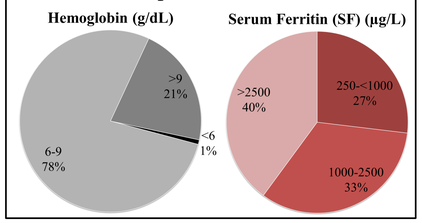
**Figure 3:** Status and type of iron chelation therapy among transfused β-thalassemia patients




### 3. Hematological, biochemical and hormonal profiles of β-thalassemia patients:

- Hematological parameters **(Figure 4):**
  - **>78%** of the patients had hemoglobin level **≤9** g/dL (mean 8.4 ± 1.4 g/dL)
  - **73.1%** of the patients had Serum ferritin **≥1000** µg/L (mean 3175.8 ± 3378.8 µg/L)

**Figure 4:** Distribution of transfused β-thalassemia patients by hematological parameters

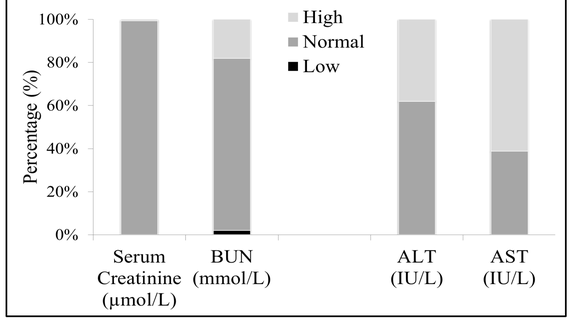



Thalassemia International Federation (TIF) Recommendations:
- Pre-transfusion **Hemoglobin 9-10.5** g/dL
- **Serum ferritin <1000** µg/L

## Results, *Continue*

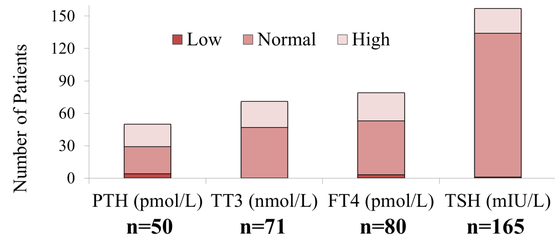
- Biochemical parameters **(Figure 5):**
  - Elevated liver enzymes (AST & ALT) were significantly correlated with SF levels (r=0.527, p-value <0.0001) and (r=0.254, p-value <0.0001), respectively.

**Figure 5:** Distribution of transfused β-thalassemia patients by biochemical parameters




- Endocrine functions **(Figure 6):**
  - Only a small proportion of β-thalassemia patients had their endocrine functions evaluated.
  - Tests were not enough to make an interpretation or to establish any diagnosis.

**Figure 6:** Distribution of transfused β-thalassemia patients by hormonal profiles




## Conclusions & Recommendations

- Although life expectancy of patients has significantly improved in the last decade, the lack of standardized protocols for the management of thalassemia is a major problem in the West Bank:
  - Hb levels far below the international recommendations
  - Uncontrolled SF levels
  - Improper assessment and follow-up for comorbidities associated with iron overload
- This study highlights the importance of establishing patient-tailored comprehensive assessment and follow-up protocols for the management of β-thalassemia to improve clinical picture and quality of life.

## References


- Martin A, Thompson AA. Thalassemias. Pediatric Clinics of North America. 2013;60(6):1383-1391.
- Galanello R, Origa R. Beta-thalassemia. Orphanet journal of rare diseases. 2010;5(1):11.
- Karmi BA. Palestine and Thalassemia. This Week In Palestine [Scientific]. 2014. Thalassemia Patients in 2019. Ramallah, Palestine2019, https://tpfs.ps.
- Cappellini, M. D., & Motta, I. (2017). New therapeutic targets in transfusion-dependent and -independent thalassemia. Hematology. 2017(1), 278–283. doi:10.1182/asheducation-2017.1.278.
- Guidelines for the Management of Transfusion Dependent Thalassemia (TDT). 3rd Edition ed: Thalassemia International Federation; 2014.