**Table S1. Distribution of Study Population according to Age and Gender**

| Variable | | No Hemoglobinopathy | | Hemoglobinopathy | | Significance |
|---|---|---|---|---|---|---|
| | | No. | % | No. | % | p-value |
| Age | < 10 yr | 48 | 71.6% | 19 | 28.4% | 0.277 |
| | 10 - 19 yr | 295 | 83.3% | 59 | 16.7% | |
| | 20 - 29 yr | 13 | 86.7% | 2 | 13.3% | |
| | 30 - 39 yr | 5 | 100.0% | 0 | 0.0% | |
| | 40 - 49 yr | 1 | 100.0% | 0 | 0.0% | |
| | 50 - 59 yr | 1 | 100.0% | 0 | 0.0% | |
| | 60 - 69 yr | 2 | 100.0% | 0 | 0.0% | |
| Gender | Male | 306 | 83.4% | 61 | 16.6% | 0.106 |
| | Female | 59 | 75.6% | 19 | 24.4% | |

**Abbreviations:** No. = Number; % = Percentage; p-value = Probability value.

Presents an analysis of the distribution of hemoglobinopathy by gender and age group. Among age categories, persons younger than 10 years old exhibited a prevalence of 28.4%, compared to 16.7% in the 10–19 years group, 13.3% in the 20–29 years group, and 0% in older age groups (30–69 years). With a p-value of 0.277, there is no statistically significant correlation between the prevalence of hemoglobinopathy and age for age-related differences.
In terms of gender, hemoglobinopathy affected 16.6% of men and 24.4% of women. There was no statistically significant difference in prevalence between the sexes, as indicated by the chi-square value of 2.61 and the p-value of 0.106.

**Table S2. Hemoglobinopathy Distribution by Diagnosis**

| Hemoglobinopathies | No. | % |
|---|---|---|
| Heterozygous HbS (Sickle cell) | 35 | 43.8% |
| Heterozygous β-Thalassemia | 26 | 32.5% |
| Normal study/HBJ Meerut Heterozygous | 16 | 20.0% |
| Hb D Punjab Heterozygous | 2 | 2.5% |
| Double heterozygous for HbE and HbS | 1 | 1.3% |

**Abbreviations:** Hb = Hemoglobin; Hb D Punjab = Hemoglobin D Punjab; HbE = Hemoglobin E; HbJ Meerut = Hemoglobin J-Meerut; HbS = Hemoglobin S (Sickle cell);No= number

Sequencing results for the study participants showed that 43.8% (n=35) were heterozygous for HbS (sickle cell), 32.5% (n=26) were heterozygous for β-thalassemia, 20.0% (n=16) had a normal study/HBJ Meerut heterozygous profile, 2.5% (n=2) were heterozygous for Hb D Punjab, and 1.3% (n=1) were double heterozygous for HbE and HbS."