

Characteristics	Iron deficiency anemia group (N= 177)	β-Thalassemia trait group (N= 23)	P-value
Age (years) Mean± S.D. Median (Range)	2.73 ± 2.53 1.7 (0.5 – 12)	7.87± 4.93 9 (3 – 16)	<0.001
Gender Female Male	62 (35%) 115 (65%)	13 (56.5%) 10 (43.5%)	0.045*
Weight (Kg) Mean± S.D. Median (Range)	12.47 ± 5.48 10.5 (6 – 34)	24.83 ± 10.52 29 (12 – 37)	<0.001

Table (1): Comparison between the study groups regarding age, gender, and weight.

P-value is calculated by Mann-Whitney U test

* P-value is calculated by Chi-Square test

P-value <0.05 is statistically significant

laboratory investigation	Iron deficiency anemia group (N= 177)	Thalassemia trait group (N= 23)	P-value
MCV (fl.) Mean± S.D. Median (Range)	63.24 ± 6.86 66.2 (48.7 – 80.5)	58.16± 2.87 57 (55 – 63.5)	<0.001*
MCH (pg.) Mean± S.D. Median (Range)	20.61± 3.59 21 (13.5 – 27.5)	18.36± 0.77 18 (16.8 – 19.6)	0.002*
MCHC (g/dl) Mean± S.D. Median (Range)	31.83 ± 2.84 32.1 (20.4 – 36.4)	30.97 ± 0.79 31 (30 – 32)	0.005*
HCT (%) Mean± S.D. Median (Range)	29.64 ± 3.84 29.4 (22.9 – 38)	31.56 ± 0.48 31.7 (31 – 32.1)	0.004*
Hb (g/dl) Mean± S.D. Median (Range)	9.63 ± 0.85 9.5 (8.65 – 11.4)	9.67 ± 0.29 9.7 (9.2 – 10)	0.332
RDW (%) Mean± S.D. Median (Range)	20.05 ± 4.12 18.8 (13 – 28.1)	19.5 ± 3.42 17.5 (16.5 – 25.1)	0.431
RBCs count (millions/cmm) Mean± S.D. Median (Range)	4.62 ± 0.65 4.56 (3.37– 6.4)	5.37± 0.38 5.5 (4.63 – 5.79)	<0.001*
Serum iron (ug/dl) Mean± S.D. Median (Range)	39.05± 28.18 35 (8 – 118.7)	67.83 ± 29.85 48 (46 – 120)	<0.001*
Serum ferritin (ng/ml) Mean± S.D. Median (Range)	48.04 ± 66.48 20 (2.5 – 318.5)	29.41 ± 10.66 34.1 (10.52 – 40)	0.418
Total iron-binding capacity (ug/dl) Mean± S.D. Median (Range)	386.14± 67.76 399 (228.6– 530)	288.13 ± 24.96 300 (250 – 318)	<0.001*

Table (2): Comparison between the study groups regarding laboratory investigation.

P-value is calculated by Mann-Whitney U test.

*P-value <0.05 is statistically significant.

RBC, red blood cells; Hb, hemoglobin; HCT, hematocrit; MCV, mean corpuscular volume; MCH, mean corpuscular hemoglobin; MCHC, mean corpuscular hemoglobin concentration; RDW, red blood cell distribution width.

Marker	Old publish ed Cut off	IDA	B-TT	Sensitivi ty (%)	Specificali ty (%)	YI (%)	PPV (%)	NP V (%)
		(n=17 7)	(n=2 3)					
Mentzer index (MI) IDA β-TT	>13 <13	104 73	0 23	100.00	58.76	58.7 6	23.9 5	100
Modified Mentzer index (MI) IDA β-TT	>0 <0	104 73	0 23	100.00	58.19	58.1 9	23.9 5	100
RDWI IDA β-TT	>220 <220	141 36	8 15	65.22	79.66	44.8 8	29.4 1	94.6 3
Shine and Lal index IDA β-TT	>1530 <1530	2 175	0 23	100	1.13	1.13	11.6 1	100
Srivastava and Bevington index IDA β-TT	>3.8 <3.8	120 57	4 19	82.61	67.80	50.4 1	25	96.7 7
Green and King index IDA β-TT	>65 <65	128 49	9 14	60.87	72.32	33.1 9	22.2 2	93.4 3
Sirdah index IDA β-TT	>27 <27	117 60	6 17	73.91	66.10	40.0 1	22.0 7	95.1 2
Ehsani index IDA β-TT	>15 <15	104 73	0 23	100	58.76	58.7 6	23.9 5	100
England and Fraser index IDA β-TT	>0 <0	148 29	14 9	39.13	83.05	22.1 8	23.6 8	91.3 5
Ricerca index IDA β-TT	>3.3 <3.3	146 31	9 14	60.87	82.49	43.3 6	31.1 1	94.1 9
MDHL (male) IDA β-TT	<1.7M, <1.5F >1.7M, >1.5F	97 18	5 5	50	84.35	34.3 5	21.7 3	95.0 9

MDHL (female) IDA β -TT	< 0.3045 > 0.3045	28 34	0 13	92.31	43.55	35.8 6	27.6 5	100
MCHD IDA β -TT	> 21 < 21	39 138	6 17	26.09	77.97	4.06	10.9 6	86.6 6
Keikhaei index IDA β -TT	< 14 > 14	142 35	9 14	60.87	80.23	41.1	28.5 7	94.0 3
Sirachainan index IDA β -TT	< 44.76 > 44.76	177 0	23 0	0	100	0	-	88.5
Bordbar index IDA β -TT	> .3095 < 0.3095	46 131	0 23	100	25.99	25.9 9	14.9 3	100
Differentiating score for male IDA β -TT	> 23 < 21	65 50	5 5	50	56.52	6.52	9.09 0	92.8 5
Differentiating score for female IDA β -TT	321-370 < 250	42 20	4 9	69.23	67.74	36.9 7	31.0 3	91.3 0
Huber-Herklotz Index (HH) IDA β -TT	10.5-13 < 8	174 3	23 0	0	98.31	- 1.69	0	88.3 2
Kerman Index 1 IDA β -TT	> 67 < 67	34 69	0 23	100	61.02	61.0 2	25	100
Kerman Index 2 IDA β -TT	> 220 < 220	37 69	0 23	100	65.09	56.6 7	25	100
Hisham Index (Hi) IDA β -TT	> 14 < 14	134 43	9 14	60.87	75.71	36.5 8	24.5 6	93.7 0
Hameed Index (Ha) IDA β -TT	< 5 > 5	0 177	0 23	100	0	1	11.5	-

RDW	>13	168	23	0	94.35	-	0	87.9
IDA	<13	9	0			5.65		5
β-TT								
RBCs count	>0	126	4	82.61	71.19	53.8	27.1	96.9
IDA	<0	51	19				4	2
β-TT								

Table (3): sensitivity, specificity, negative predictive value, positive predictive value, and Youden's index of the studied indices using the published cutoff point.

RBC, red blood cells; RDW, red blood cell distribution width; MCHD, mean cell Hb density; MDHL, mean density of Hb/liter of blood.

(cut-off values transformed into generally used units: Hb in g/dL; RBC in 10¹²/L; MCV in fL; MCH in pg.; HCT in % MCHC in g/dL; RDW in %).