

Improved Health-related Quality of Life with insulin therapy in children with Cystic Fibrosis Related Diabetes - a prospective cohort study



Cystic Fibrosis & Diabetes Study

Sherly George^{a,h}, Hilary MCV Hoey^{b,d}, Colm Costigan^c, Nuala Murphy^e, Edna F Roche^{b,d}, Stephen MP O'Riordan^{f,g}

University College Dublin; Trinity College, Dublin; Our Lady's Hospital for Sick Children, Crumlin, Dublin; Adelaide and Meath Hospital Incorporating National Children's Hospital, Tallaght, Dublin; The Children's University Hospital, Temple Street, Dublin; Cork University Hospital, Cork; University College Cork; Coombe Women and Infants University Hospital, Dublin.

BACKGROUND

- Cystic Fibrosis related diabetes (CFRD) is a complication of CF. This is the second most common form of diabetes in Paediatrics. It has some features of Type 1 and Type 2 diabetes¹.
- Intensive management strategies including insulin therapy are needed to control hyperglycaemia, prevent diabetes-related complications and optimisation of nutrition.
- Symptoms and treatment of CFRD along with the routine CF management may impose additional burden to these children and adversely affect their health-related quality of life (HRQoL).

OBJECTIVES

- To assess the HRQoL in CF children with normal glycaemia (CFN) and CFRD
- To evaluate the HRQoL changes in children with CFRD over one year period following the commencement of insulin therapy and compare with those with normal glycaemia

METHODS

- A prospective observational study including 103 children with CF was undertaken. Data were collected at baseline and after 1 year.
- Demographic and clinical data were collected from children, parents and clinical notes.
- HRQoL data were collected from children using generic questionnaire (KIDSCREEN-10) and disease-specific (DISABKIDS-CF) questionnaire. Total score ranged from 0 to 100 and higher score is with better HRQoL.

RESULTS

	Baseline	After 1 year	p-value
Sample (n)	103	98	
Age Mean (± sd)	14.4 (2.6)		
Male (%)	54	54	
BMI Mean (± sd)	18.7 (3.0)	18.9	NS
FEV1% Mean (± sd)	67.6 (23.0)	66.1	NS
CFN (%)	88	76	
CFRD (%)	12	24	
KIDSCREEN Score	53.2 (10.4)	52.2	NS
Impact Score	68.1 (24.4)	63.7	NS
Treatment Score	67.3 (21.7)	67.5	NS

There were no significant changes in any of the dependent and independent variables assessed in this study sample over a one year period.

RESULTS

	CFN	CFRD	p-value
Sample: n (%)	91 (88.3)	12 (11.7)	
Age Mean (± sd)	14.1 (2.6)	16.3 (2.1)	<0.01
Male (%)	52 (57)	4 (33)	
BMI Mean (± sd)	18.7 (3.0)	18.7 (3.0)	NS
FEV1% Mean (± sd)	70.2 (22)	48.2 (25.4)	<0.005
Age CF diagnosed	2.2 (3.4)	0.8 (1.2)	

Independent t-test showed that the children with CFRD were significantly older, with lower FEV₁%. They were diagnosed with CF in an younger age compared to CFN group.

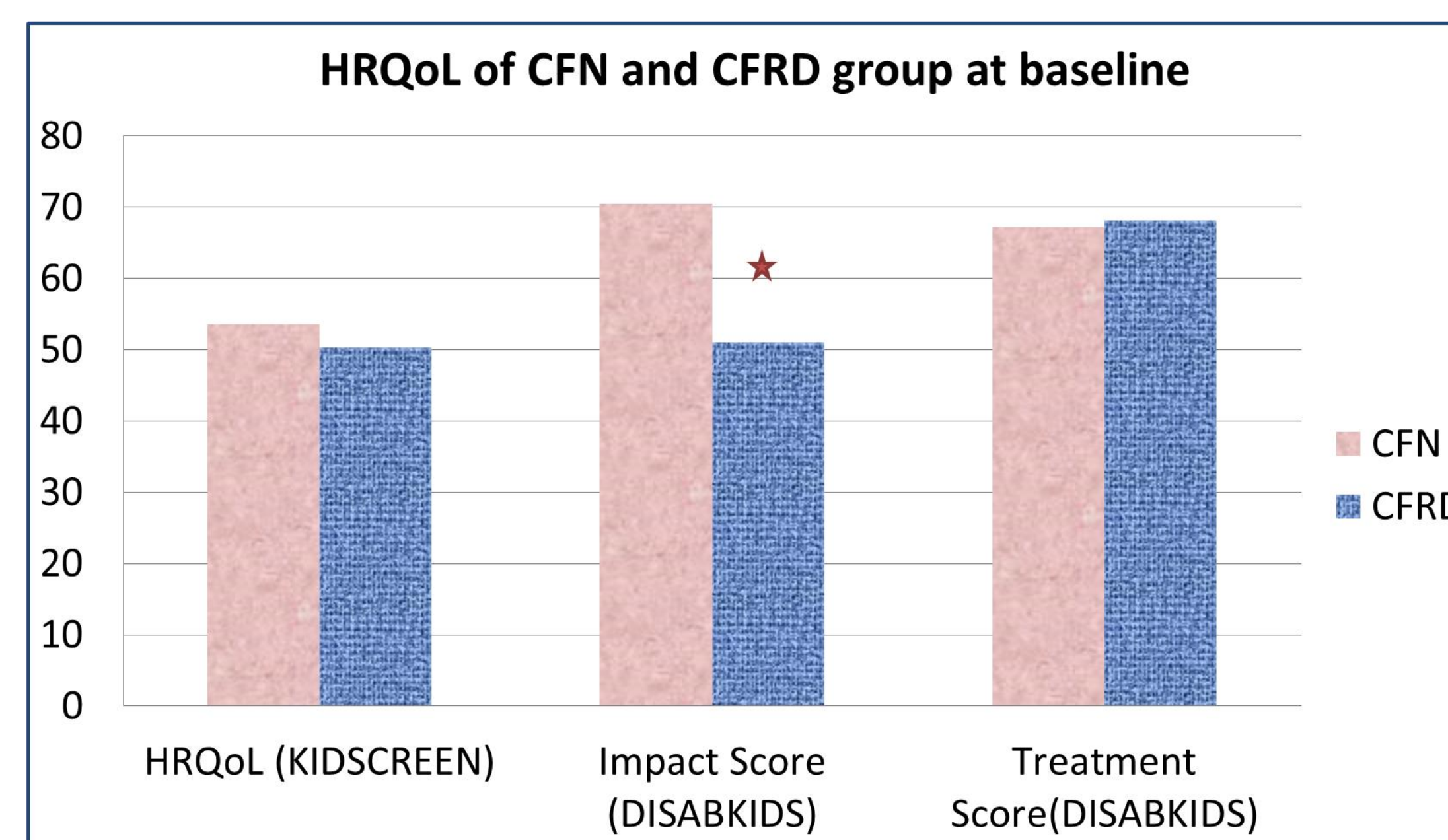


Figure 1: The HRQoL scores of CFN and CFRD groups at baseline.

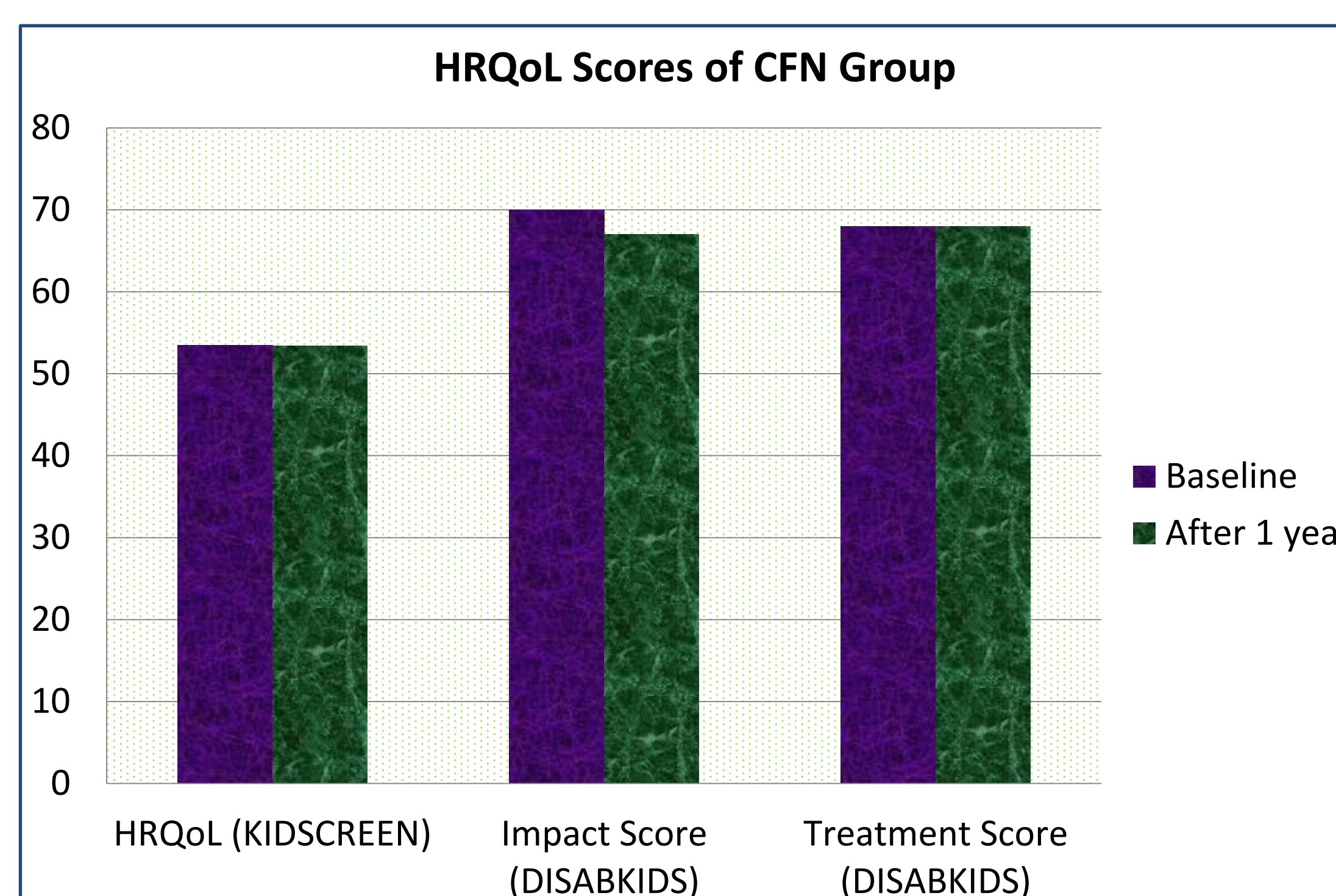


Figure 2: HRQoL scores of CFN in two assessments

Even though, paired t-test showed no significant change in the HRQoL scores over 1 year period in the CFN group, impact score was lower.

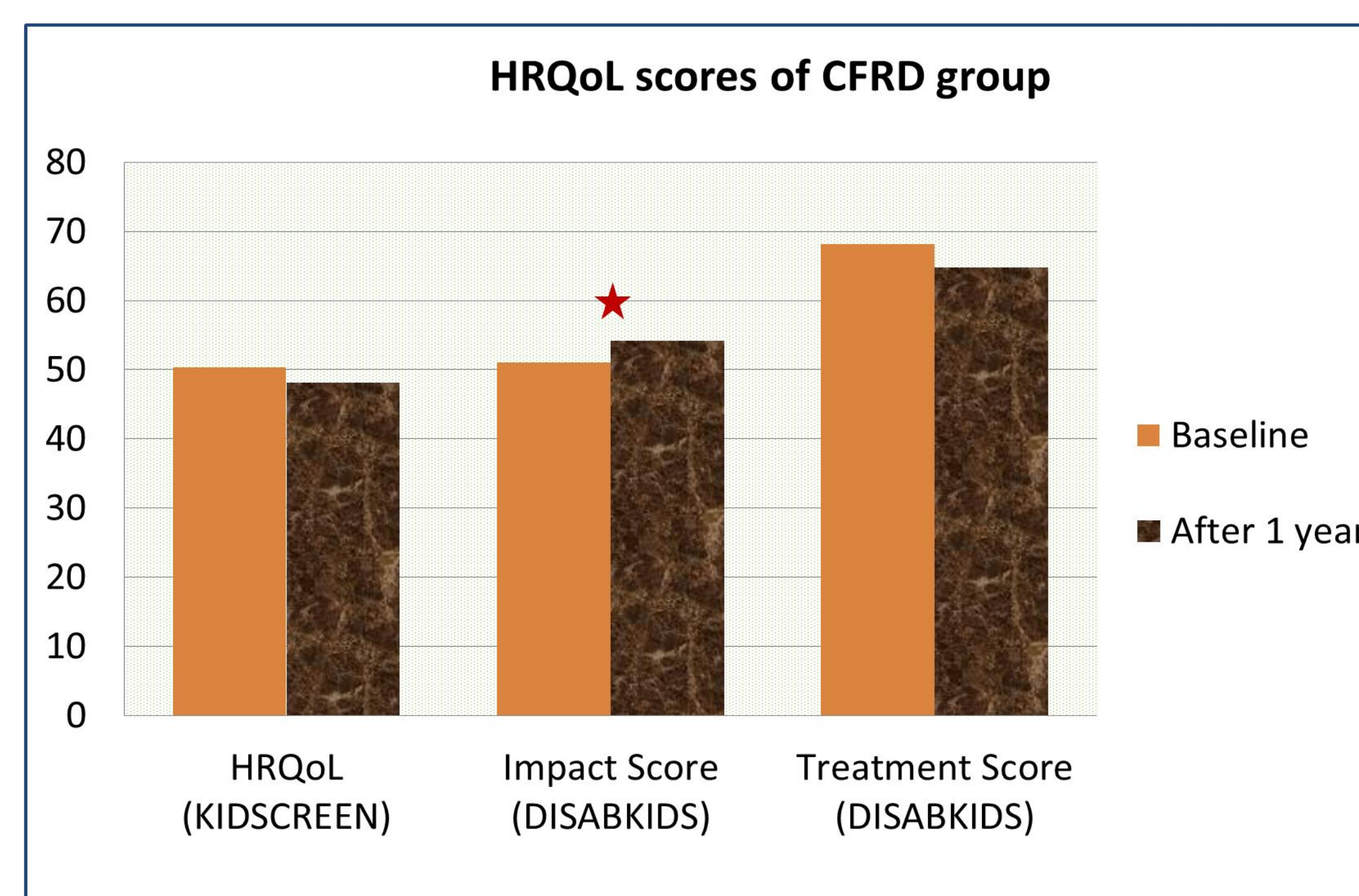


Figure 3: HRQoL of CFRD group in the two assessments

RESULTS

- Independent t-test showed significant (p<0.01) difference in the impact score among the CFN and CFRD groups (Figure 1).
- In CFRD, the HRQoL (KIDSCREEN) and treatment scores decreased and the impact score increased in a year's time (Figure 3).

DISCUSSION

- Children with CFRD had lower HRQoL than CFN group in relation to their general functioning and well-being.
- Regarding the disease-specific factors, the symptoms were adversely affecting their QoL. However, the HRQoL in relation to their treatment was not affected.
- After one year of insulin therapy, CFRD group's QoL related to the symptoms improved. The overall HRQoL and treatment associated QoL decreased.
- In the CFN group, the symptoms related HRQoL decreased and general QoL and treatment-related QoL remained stable.

CONCLUSIONS

- Onset of diabetes adversely affect the HRQoL of children with CF.
- Findings suggest that insulin therapy improves symptoms and thus improves QoL.
- Diabetes prevention, detection and treatment are important in the care of children with CF.
- Further regression analysis is needed to assess the independent predictors of HRQoL in CFRD.
- Further research is warranted to explore the HRQoL associated symptoms and their severity in children with CFRD. This will help to plan management strategies to optimise their QoL.

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