



# Predictors of Optimal Glycemic Control in Children with Diabetes Mellitus Type 1 Receiving Pump Insulin Therapy

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**Objectives:** To study predictors of target levels of glycosylated hemoglobin (HbA<sub>1c</sub>) in children with diabetes mellitus type 1 (DM1), receiving pump insulin treatment.

**Materials and Methods:** 64 children (27 girls, 46 adolescents) with diabetes mellitus type 1 (mean age 12.8±3.5 years, disease duration 4.46±3.1 years, daily insulin dose 0.82±0.24 units) receiving pump insulin treatment for 2.46±1.43 years were studied. The results of questionnaire were assessed, including using the main technical features of the pump (bolus advisor, bolus type, temporal basal velocity, computer data analysis), archive data of the pump, HbA<sub>1c</sub> values.

**Results:** The satisfaction of dosage device use was high, reaching 98,6% (p<0,001). Parents' participation in this therapy type was low - 57,8% (p=0,4).

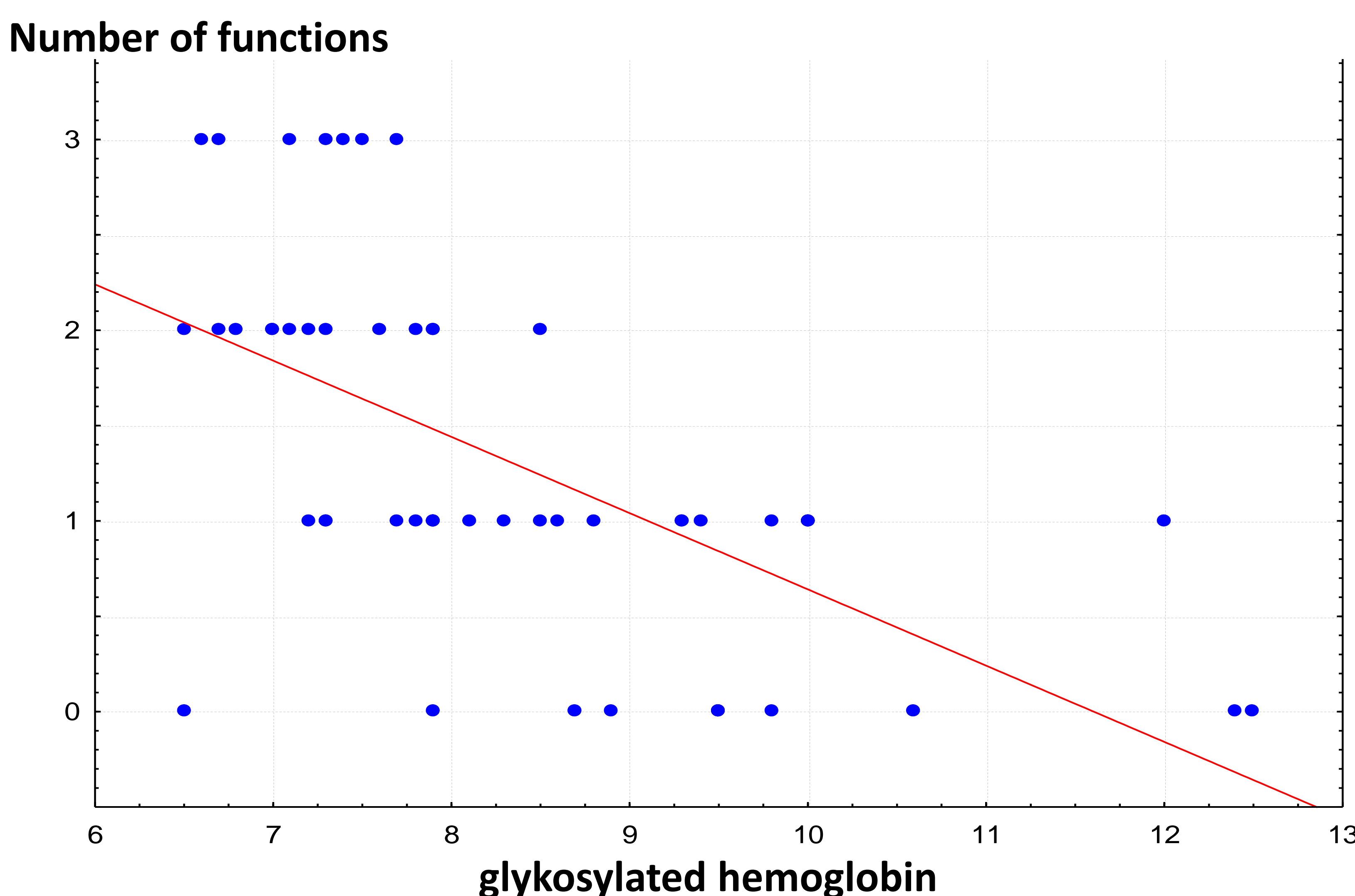
In the studied group, the mean HbA<sub>1c</sub> value was 8.08±1.46% irrespective of gender (girls, 7.73±1.05%, boys, 8.32±1.64%, p=0.1), puberty status (children, 7.6±1.0%, adolescents 8.27±1.6%, p=0.1) and the time of pump installation (since DM1 diagnosis 7.96±1.62%, with DM1 duration, 8.27±1.0%, p=0.55).

In the majority of cases (46/64, 71.9 %) the children were using less than 3 main pump functions (mean, 1.04±0.73), as reflected by the mean HbA<sub>1c</sub> value - 8.49±1.46%, while in 7 (10.9%) using 3 and more basic pump functions (3.43±0.53) this value has reached the target range and was 7.2±0.44% (p=0.0126).

Combination of continuous blood glucose monitoring with pump insulin therapy was used in 11 (17,2%) patients. The mean HbA<sub>1c</sub> value in this group has reached the target level and was 6.78±0.7% (p=0.001).

**Conclusion:** While the treatment satisfaction of dosage device use was high (98,6%), the treatment compliance for this therapy type remains low (10,9%). Parents' responsibility for pump insulin treatment administration is insufficient and was 57,8%. Using three or more basic pump technical functions and the combination of its use with continuous blood glucose monitoring helps to achieve target glycosylated hemoglobin levels in children with DM1.

INTERRELATION OF GLYKOSYLATED HEMOGLOBIN WITH NUMBER OF USED FUNCTIONS IN THE PUMP



A USE OF PUMP FUNCTIONS

