IMPROVEMENT OF HbA1c IS BLUNTED FOLLOWING DISCONTINUATION OF AN ON-LINE TELEMONITORING SYSTEM, IN PATIENTS WITH INEFFICIENTLY CONTROLLED INSULIN-TREATED DIABETES MELLITUS.

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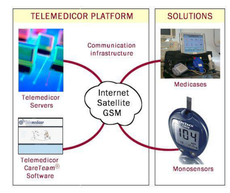
Background

Telemonitoring is based on transmission of patients' blood glucose measurements to healthcare providers through a modem. Its use can result in improvement of glycemic control in inefficiently insulin-treated patients with diabetes mellitus (DM).



Aim

Aim of our study was to determine whether the improvement of HbA1c, observed in inefficiently insulin-treated patients with type 1 and type 2 DM on a telemonitoring system, had a lasting effect following its discontinuation.

Methods

	patients	controls	*P value*
Nr	47	25	
Age	56.15±15.86	56.16±20.11	NS
BMI (Kg/m2)	29.44±6.69	27.60±5.18	NS
HbA1c %	9.90±2.62	9.92±2.45	NS

Table 1. Characteristics of patients on telemonitoring and insulin-treated patients on regular follow-up at the outpatient department (controls).

- **Data were transmitted from the glucose-meters to our clinic computers via modem.**
- **Communication with the patients was achieved with e-mails and mobile-phone text messages (SMS) through integrated software (Telemedicor).**
- **Telemonitoring period was 6 months.**
- **HbA1c and BMI were evaluated at enrollment, 3 and 6 months, as well as 6 months after discontinuation of the telemonitoring.**

- **Patients' inclusion criteria: insufficient control of DM (HbA1c>7.5%), distance from specialized medical facilities or recent hospitalization for DM.**
- **Controls: insufficiently insulin-treated DM patients on regular follow-up at the outpatient department.**

Results

- **Significant reduction in HbA1c was observed at 3 and 6 months in patients and controls (Table 2).**
- **Compared to controls, a significant reduction in HbA1c was also observed in the group of patients with an initial HbA1c >10% at 3 months: 6.83±1.06% vs 8.45±0.87% as well as at 6 months: 6.7±1% vs 8.17±1.21% (p<0.001) and with an initial HbA1c <10% at 3 months: 7.02±0.67% vs 7.72±0.75% as well as at 6 months: 6.86±0.65% vs 7.52±0.86% (p<0.01) (Fig. 2).**
- **Six months after discontinuation of the telemonitoring, patients' HbA1c levels deteriorated (Table 2).**
- **Significant increase was observed in both groups of patients with HbA1c >10% (7.35±1.35, p=0.001) and HbA1c <10% (7.17± 0.62, p=0.006) (Fig. 1).**

	enrollment	3 months	6 months	12 months	*p*1	*p*2	*p*3
Patients' HbA1c	9.90±2.62	6.93±0.88	6.78±0.84	7.25±1.02	<0.001	<0.001	<0.001
Controls' HbA1c	9.92±2.45 (NS)	8.04±0.87 (<0.001)	7.81±1.06 (<0.001)		<0.001	<0.001	

Table 2. HbA1c levels at 0, 3, 6 months and 6 months after discontinuation (12 months) of the telemonitoring (p1: enrollment vs 3months, p2 enrollment vs 6 months, p3 enrollment vs 12 months).

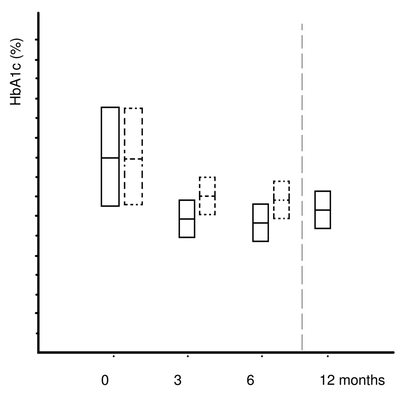


Fig.1 Comparison of HbA1c in patients and controls at 0, 3, 6 months and 6 months after discontinuation.

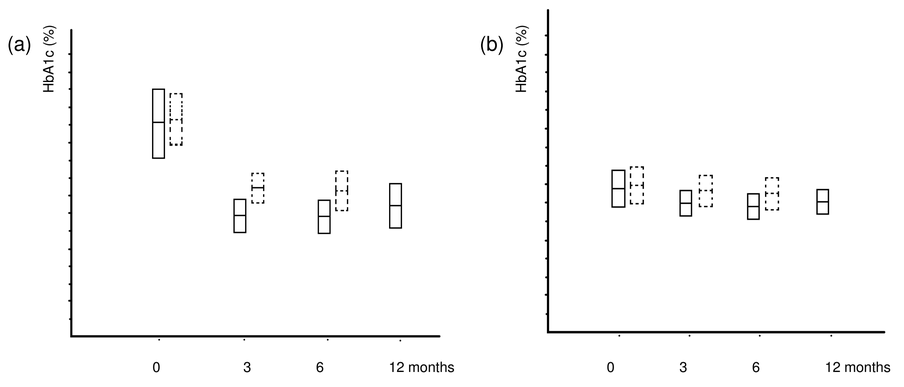


Fig.2 Comparison of HbA1c in patients and controls with HbA1c >10% (a) and <10% (b).

Conclusions

- **Telemonitoring can result in improved compliance especially in patients with HbA1c>10%. This is reflected in the reduction of HbA1c levels compared to controls.**
- **Beneficial effect on HbA1c is sustained, though blunted, 6 months after terminating the intervention.**
- **Visits of outpatient departments are reduced, resulting in lower cost and less patient inconvenience.**