Psychophysiological correlates of glucose monitoring frequency in diabetes mellitus

Indra Ramakers, Maaike Van Den Houte, Dominique Hansen, Dorien Jans, Philippe Marcq, Yves Kockaerts, & Katleen Bogaerts

BACKGROUND AND AIMS

- Diabetes mellitus (DM) is a chronic metabolic disorder characterized by heightened blood glucose levels

- Prevention of DM complications (which can be very severe) relies heavily on **self-management**, including healthy diet, exercise, and blood glucose monitoring

- **The goal of this study was to investigate psychological and physiological correlates of blood glucose monitoring frequency in DM patients using a continuous blood glucose monitoring sensor**

METHODS

Sample:
59 patients with diabetes mellitus
- 44% women, 56% men
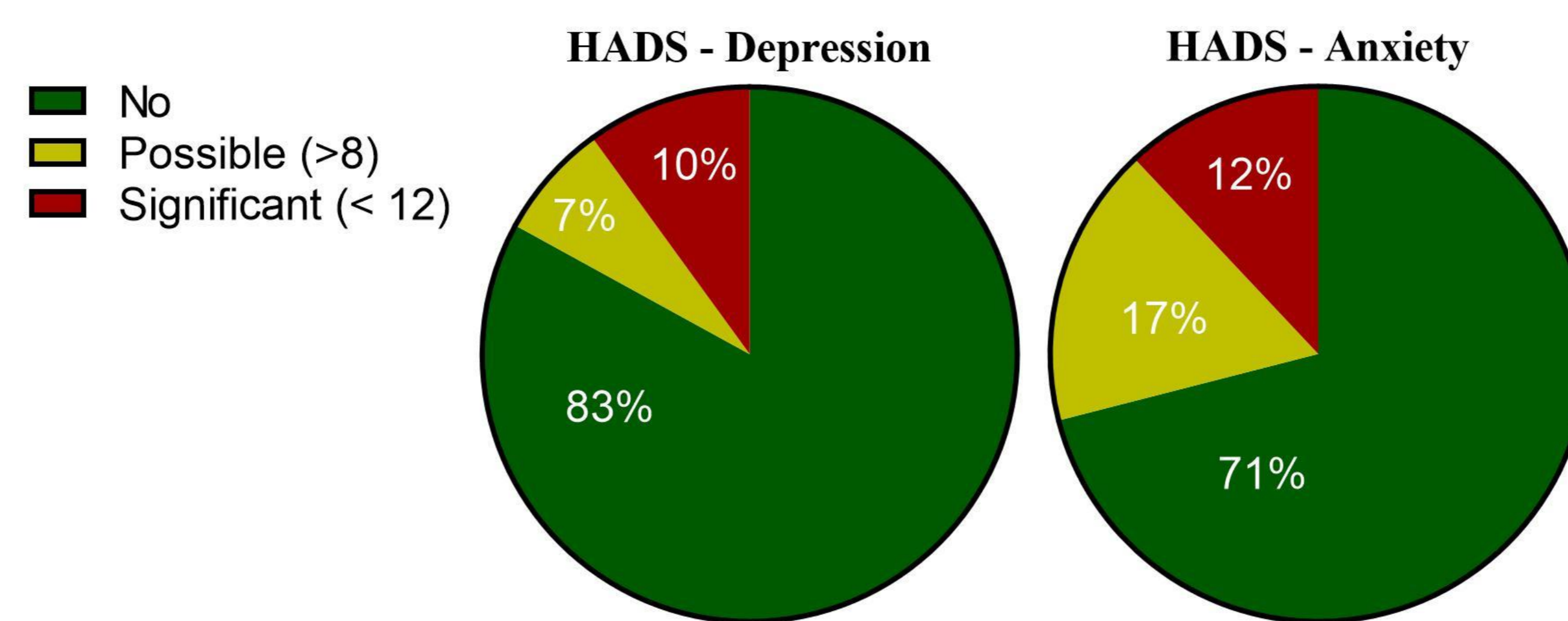- Primarily (83%) type 1 DM
- Mean age = 51.3 (SD = 14.2)

Design
- All patients made use of the FreeStyle Libre **continuous blood glucose monitoring system.** Blood glucose levels can be obtained by scanning the sensor attached to their body.
- **Blood glucose monitoring frequency** was averaged over a 90-day wearing period
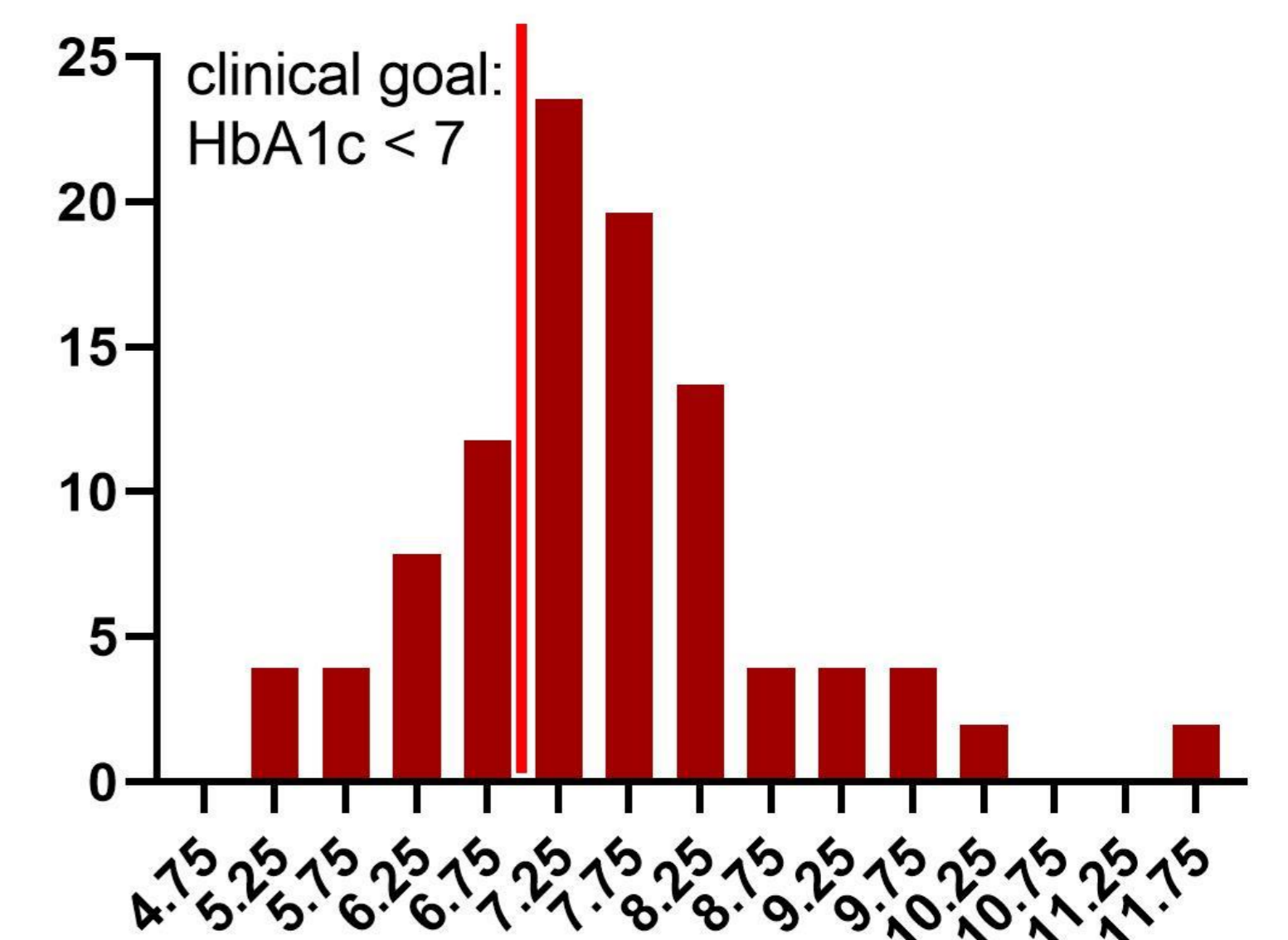
Measures
- **Average number of blood glucose measurements** per day
- **HbA1c** value
- Questionnaires:
  o **Anxiety and depression:** Hospital Anxiety and Depression Scale (HADS)
  o **Diabetes acceptance:** Acceptance and Action in Diabetes Questionnaire (AAQD)
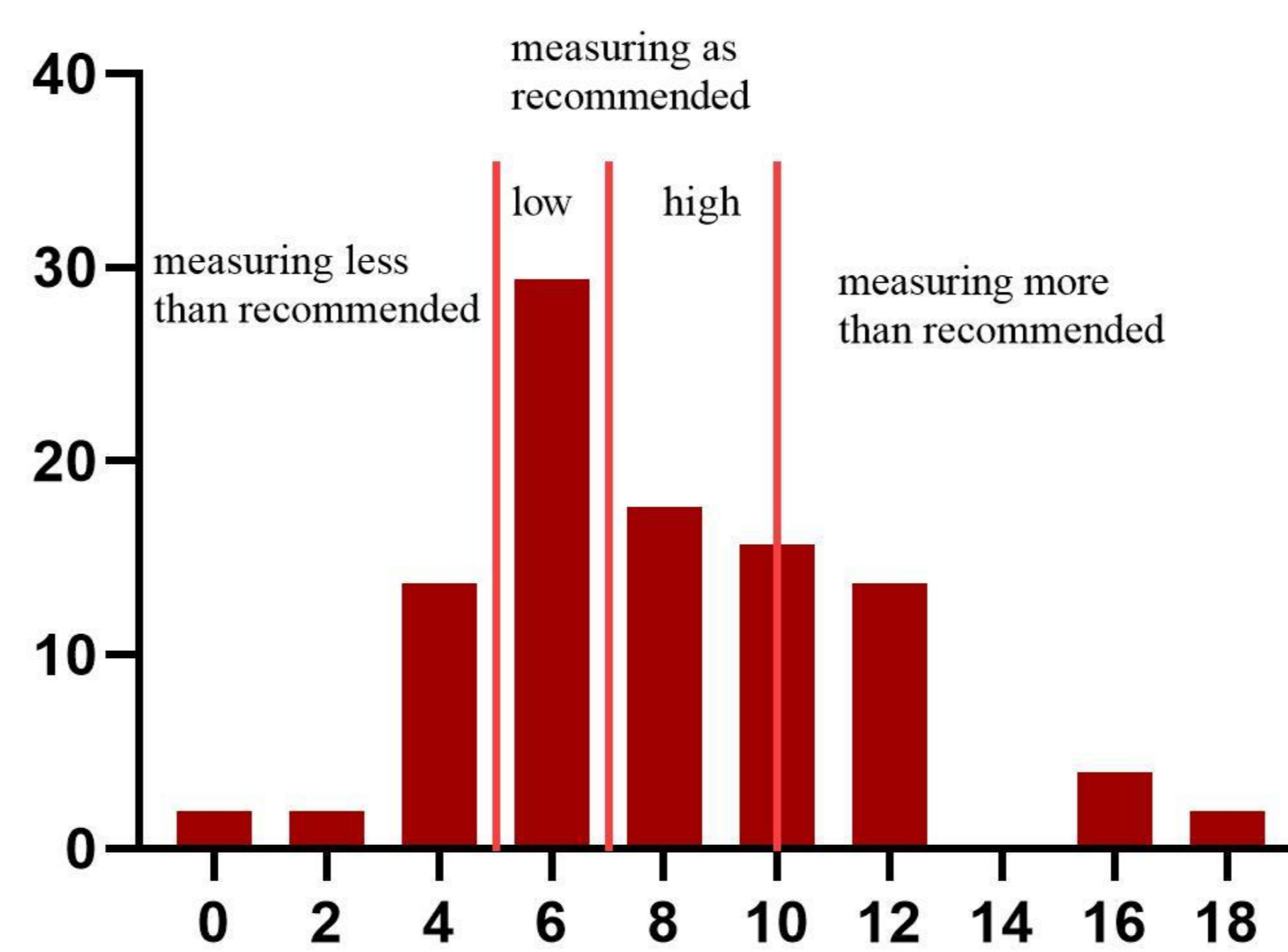 o **Need for control:** Need for controllability and predictability questionnaire (NCPq)

RESULTS
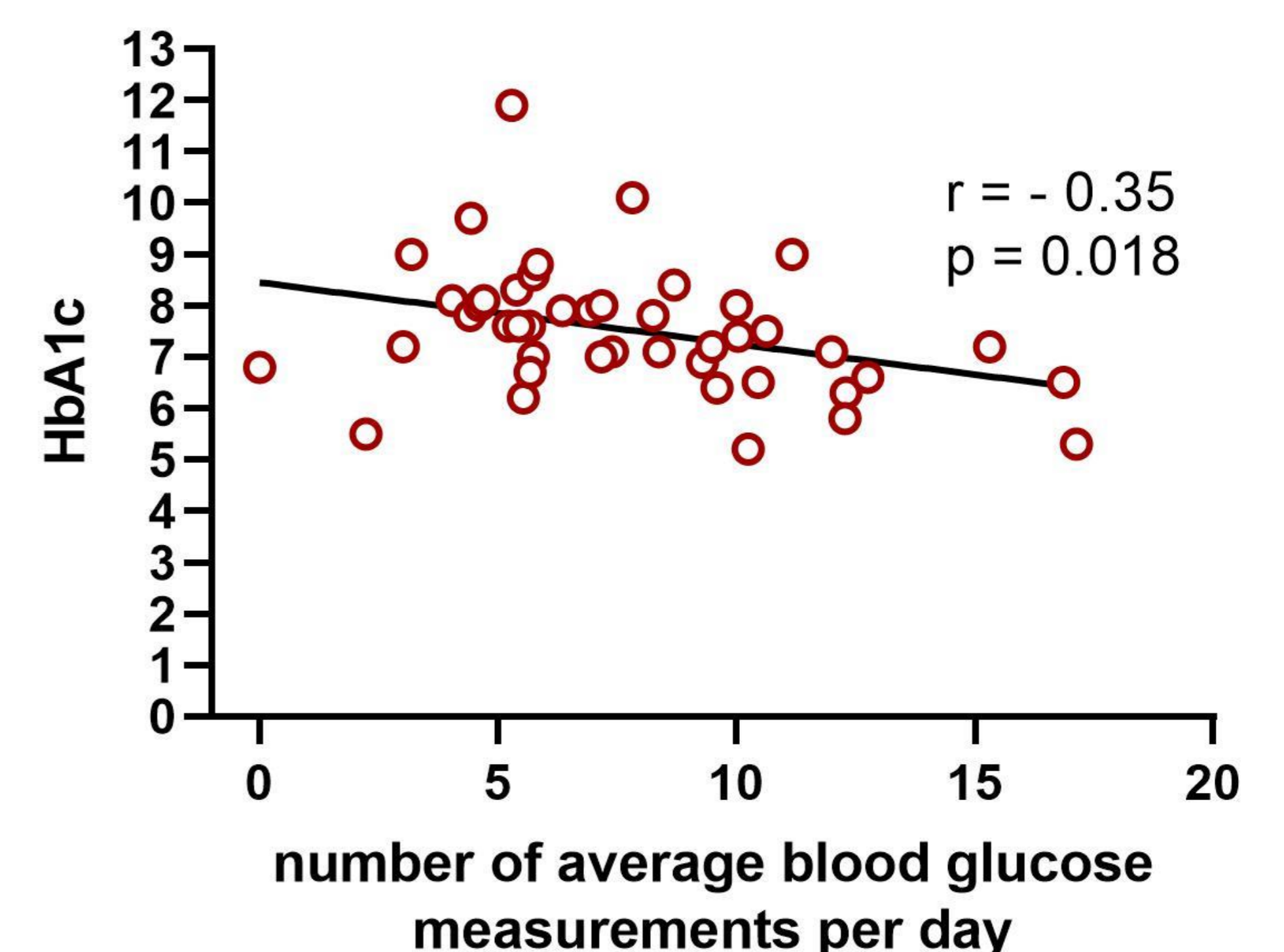
1. Frequency of anxiety and depression in patient sample

Legend:
- No
- Possible (>8)
- Significant (< 12)

HADS - Depression: No 83%, Possible (>8) 7%, Significant 10%

HADS - Anxiety: No 71%, Possible (>8) 17%, Significant 12%

2. Frequency distribution of HbA1c values In patient sample

clinical goal: HbA1c < 7

3. Frequency distribution of average number of blood glucose measurements per day

measuring less than recommended | measuring as recommended (low | high) | measuring more than recommended

4. Correlation between average number of blood glucose measurements per day and HbA1c value

r = - 0.35
p = 0.018

5. Questionnaire scores by average number of blood glucose measurements per day (quartile split)

p = 0.76 (HADS anxiety and depression total score)
p = 0.25 (Need for controllability and predictability questionnaire)
p = 0.80 (Acceptance and action in diabetes questionnaire)

Legend:
- Measuring less than recommended
- Measuring as recommended - low
- Measuring as recommended - high
- Measuring more than recommended
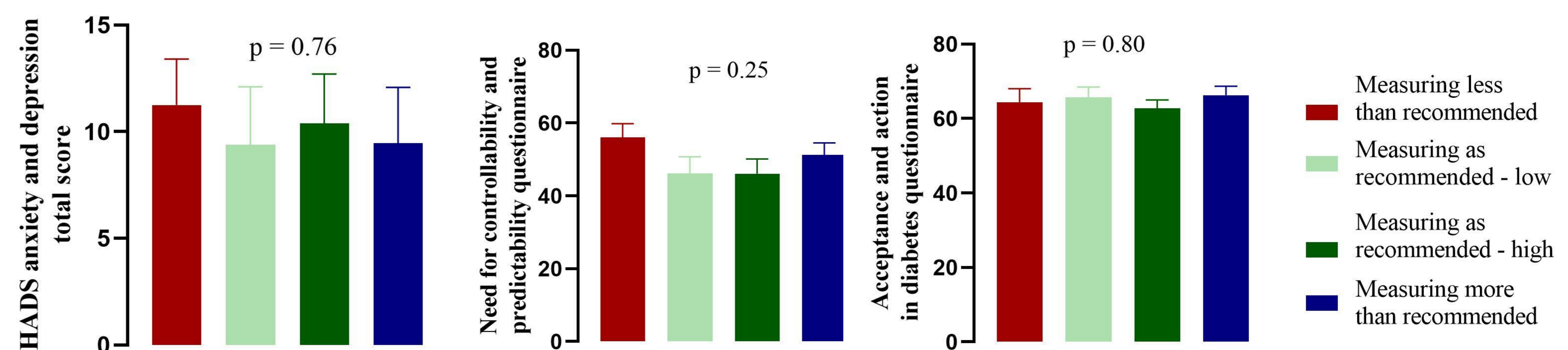
CONCLUSIONS

- Prevalence of significant anxiety or depressive symptoms was rather low in this sample

- Patients who measures their blood glucose level more often, had lower (= better) HbA1c values

- No relationship between psychological variables and number of blood glucose measurements per day was found