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Abstract

Background:
This study aimed to evaluate the performance of a glucose pattern recognition tool incorporated in a blood glucose monitoring system (BGMS) and its association with clinical measures, and to assess user perception and understanding of the pattern messages they receive.

Methods:
Participants had type 1 or type 2 diabetes mellitus and were self-adjusting insulin doses for ≥1 year. During a 4-week home testing period, participants performed ≥6 daily self-tests, adjusted their insulin regimen based on BGMS results, and recorded pattern messages in the logbook. Participants reflected on usability of the pattern tool in a questionnaire.

Results:
Study participants (n = 101) received a mean ± standard deviation of 4.5 ± 1.9 pattern messages per week (3.6 ± 1.8 high glucose patterns and 0.9 ± 1.3 low glucose patterns). Most received ≥1 high (96.5%) and/or ≥1 low (46.0%) pattern message per week. The average number of high- and low-pattern messages per week was associated with higher and lower, respectively, baseline hemoglobin A1c (p < .01) and fasting plasma glucose (p < .05). Participants found high- and low-pattern messages clear and easy to understand (84.2% and 83.2%, respectively) and considered the frequency of low (82.0%) and high (63.4%) pattern messages about right. Overall, 71.3% of participants indicated they preferred to use a meter with pattern messages.

Conclusions:
The on-device Pattern tool identified meaningful blood glucose patterns, highlighting potential opportunities for improving glycemic control in patients who self-adjust their insulin.