

Smart pen and logbook app - completing the picture



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Background

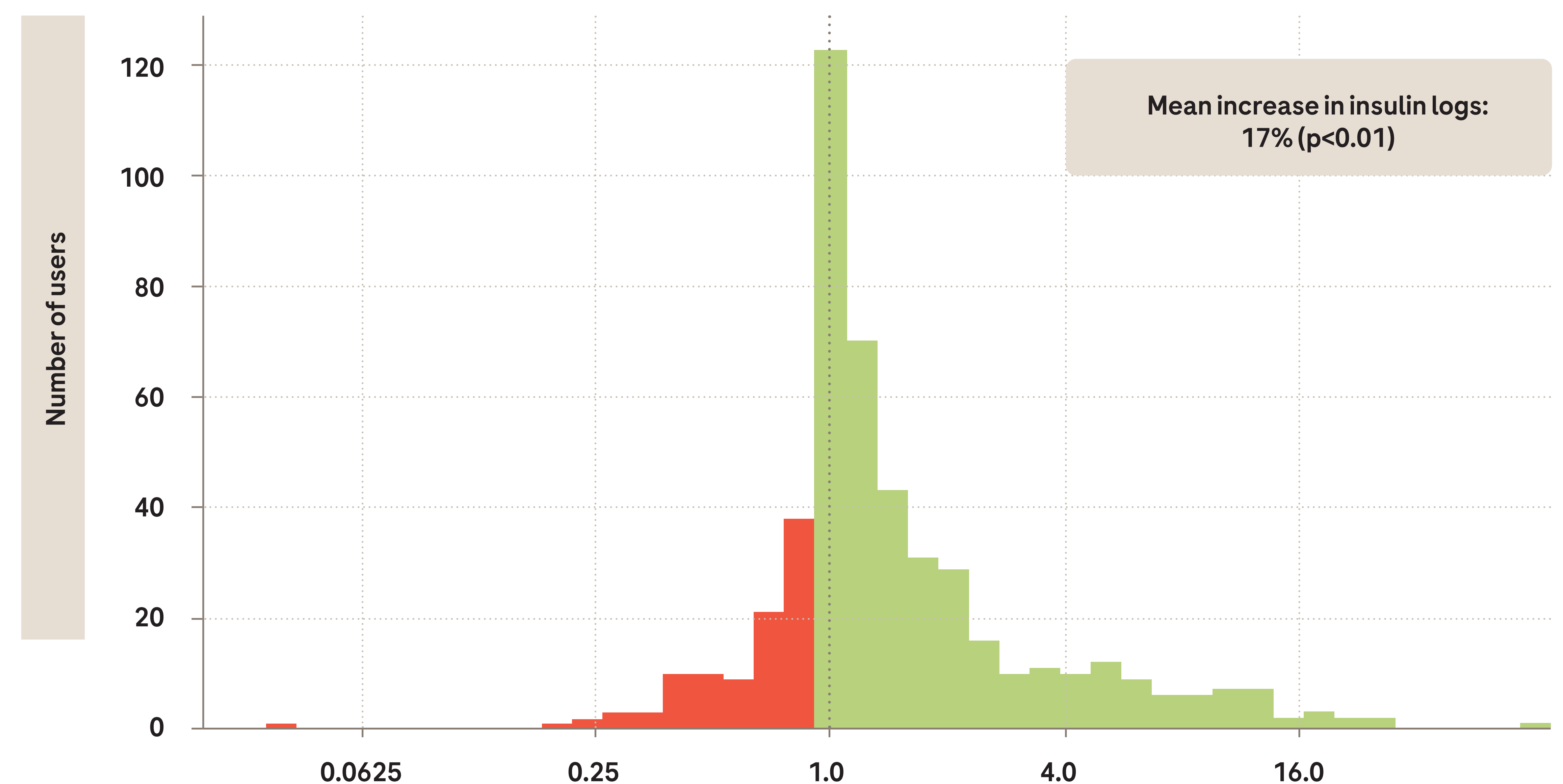
Successful long-term management of diabetes requires regular interaction between people with diabetes and their diabetes team. This interaction should be supported by accurate and complete data, which can assist in therapy adjustments. Logbooks can provide this functionality and can be particularly useful for patients on multiple daily injections, for whom complete glucose values, carbohydrate intake and insulin injections are crucial for therapy adjustments.

The logging of these parameters requires substantial effort by patients. Even though continuous glucose monitoring and connected blood glucose meters are already a well established part of the therapy of many patients, **insulin data often remains incomplete**.

Results

The pre-post comparison showed that patients who used a conventional pen significantly increased the number of bolus insulin log entries by 17% after switching to a smart pen ($p < 0.01$). The combination of a digital diabetes logbook and a smart pen solution provides a more complete data set compared to the use of a digital logbook and a conventional pen only. These findings indicate that smart pen usage is a meaningful step in attaining more complete documentation of therapy data while requiring minimal effort from the patient.

Insulin logging fold-change after switching to smartpen



The figure shows the fold change of insulin logging amount per user after switching from a conventional insulin pen to a smart pen. Shown is a histogram per user with bars colored in green indicating an increase in logging amount and bars colored in red indicating a decrease.

Methods

We analysed real-world data from mySugr[®] users to find out if there is a benefit for those who used conventional insulin pens for bolus injections, and then switched to using a smart pen. The sample (N=489) included data from users that connected their smart pen to the logbook app. We quantified the number of logs in 60 days before and after starting smart pen usage (counts were normalized by the number of days between first/last log entry and the smart pen start date) and required the users to have at least 7 logs per period covering at least 7 days of logging activity. To compare the logging activity we performed a two-sided Wilcoxon signed-rank test on the logging activity before and after switching to a smart pen.

Take-away

Smart-pens can **improve insulin data completeness**, particularly for people who perform multiple daily injections.