
Six-month data from largest ever study of digital diabetes self-management tool shows efficacy of Canary Health's "Better Choices, Better Health" program - September 9, 2016

Executive Highlights

- "Better Choices, Better Health," Canary Health's platform for diabetes self-management, just [published](#) six-month data in the [Journal of Medical Internet Research](#) from a very large (n=1,242) study in people with type 2 diabetes.
- Participants showed an average A1c reduction of 0.15% (p=0.002; baseline: 8%), a depression score (on a scale of 0-24) 1.02 points lower than baseline (p<0.001), and self-reported hypoglycemia symptoms (on a scale of 0-7) 0.19 points lower than baseline (p<0.001).
- We talked with Chief Medical Officer Dr. Neal Kaufman, who commented on reasons for the relatively modest overall A1c reduction, which was nearly 1% (0.93%) in those with a baseline A1c >9% - of course, these are the patients most in need of help and where digital health needs to drive real change.
- We look forward to 12-month data from the Canary Health-sponsored, Stanford-conducted study, which will hopefully make a case for payer reimbursement of diabetes self-management support interventions, whether delivered in-person or digitally.

Canary Health, a company focused on digital health self-management support interventions, recently [announced](#) the results of a new [study](#) providing large-scale empirical evidence in support of its "Better Choices, Better Health" diabetes self-management program. The full results were [published](#) in the Journal of Medical Internet Research. Designed as a six-week workshop to increase participants' self-efficacy, "[Better Choices, Better Health](#)" was delivered both in-person (n=232) and online (n=1,010) to patients with type 2 diabetes. After six months, participants on average showed an A1c reduction of 0.15% (baseline: 8%; p=0.002), a depression score (on a scale of 0-24) 1.02 points lower than baseline (p<0.001), and self-reported hypoglycemia symptoms (on a scale of 0-7) 0.19 points lower than baseline (p<0.001). Self-reported medication adherence (on a scale of 0-4) was 0.14 points better (p<0.001) at the six-month mark, while patients' communication with their doctors (on a scale of 0-5) improved by 0.22 points (p<0.001). The study, conducted by researchers at the Stanford School of Medicine, aimed to replicate the results of previous trials demonstrating the program's positive effects in a much larger population and in real-world settings.

A sub-analysis of patients with baseline A1c $\geq 9\%$ revealed a greater mean A1c reduction of 0.93% (p<0.001), and the program reduced the proportion of patients with A1c $\geq 9\%$ in the study from 20% to 15% in six months (p<0.001).

The size and length of the study was impressive for a digital health intervention. That said, we noticed several limitations beyond those covered in the paper's discussion: (i) no control group; (ii) many of the metrics, including hypoglycemia, relied on self-report; and (iii) the relatively modest overall A1c reduction was driven entirely by patients with a very high A1c (>9%) at baseline (there was a slight, non-significant mean increase in A1c among participants with a baseline A1c <9%).

Chief Medical Officer Dr. Neal Kaufman (Canary Health, Los Angeles, CA) emphasized that all self-report measures were collected via validated instruments, though he acknowledged that a follow-up study using CGM and looking at time-in-range could be beneficial. He explained that the relatively modest A1c reduction is likely a consequence of the concerted effort to include diverse, real-world patients in this study -

participants entered the program with a wide range of baseline A1c, including values at or close to target, leading to a wide confidence interval.

Dr. Kaufman underscored that "Better Choices, Better Health" could be a cost-effective solution to help type 2 diabetes patients with the greatest need for supplementary, supportive care. In fact, participants who had high baseline A1c values, symptoms of depression, frequent hypoglycemia symptoms, poor medication adherence, and minimal physical activity experienced the most clinically and statistically significant improvements on relevant parameters.

We're glad to see continued clinical investigation of digital health programs - this is a key way to get payers' attention. We wonder if these results could support reimbursement in high A1c patients. We'd also love to see a cost-effectiveness study of the program with more rigorous methods of assessing clinically-meaningful improvements in hypoglycemia, adherence, etc.

- **"Better Choices, Better Health" demonstrated statistically significant (but clinically small) improvements on 13 of 14 parameters:** A1c ($p=0.002$), depression ($p<0.001$), general health ($p<0.001$), illness intrusiveness ($p=0.03$), hypoglycemic symptoms ($p<0.001$), fatigue ($p<0.001$), aerobic exercise ($p=0.01$), medication adherence ($p<0.001$), communication with doctor ($p<0.001$), proportion receiving eye exam in last six months ($p<0.001$), proportion receiving foot exam in last six months ($p<0.001$), proportion receiving cholesterol exam in last six months ($p<0.001$), and proportion receiving kidney exam in last six months ($p<0.001$). The only parameter that did not experience a statistically significant improvement was sleep.
- **With regard to patient engagement, the Canary Health program had a strong retention rate of ~71% for the Internet group and ~74% for the in-person group.** Of the 85 patients who had received no screening for eye, foot, cholesterol, or kidney complications at the beginning of the study period, 86% (73 individuals) had at least one examination within six months. It's positive to see continued healthy behaviors after six months with the program and by the program's apparent ability to motivate improved healthcare utilization. We see self-management programs as particularly valuable for their ability to offer psychosocial support, motivate patients, and sustain patient engagement throughout treatment for this chronic disease. Thus, we appreciated that the study collected data on patient engagement and other quality of life outcomes beyond A1c.
- **Notably, the Stanford study demonstrated similar efficacy for both the in-person and online versions of the workshop.** The online version comes with much less variability in how the education is delivered. Study authors note that patients weren't given a choice as to which method they preferred to participate in "Better Choices, Better Health." Offering flexible choice between in-person and online delivery may allow for greater penetration of this program within the diabetes patient population. We'd also be interested in learning if some components of the program are more critical to its success than others - patients lead busy lives beyond their diabetes management, and zooming in on specific key features could be an important step in optimizing diabetes self-management programs.
- **What's next for "Better Choices, Better Health"?** Dr. Kaufman reiterated that the recently-published paper includes only six-month data; analysis of 12-month data is in the works and will hopefully provide even more convincing evidence that this diabetes self-management program lowers A1c and improves patient quality of life. Moreover, Dr. Kaufman highlighted that Canary Health's recent partnership with Medtronic demonstrates how [support](#) for these approaches is coming from a variety of channels.

-- by Payal Marathe, Helen Gao, Adam Brown, and Kelly Close