

Real-World Digitally Based Diabetes Management Program Implementation by a Large Employer

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In the US, employers play a significant role in the financing and provision of private health insurance, covering approximately 179 million individuals in 2022.¹ Many employers and health plans invest in disease management programs because of the disproportionate influence of chronic conditions on medical care utilization and spending.² In 2023, among employers that offered health benefits, 36% of small firms and 64% of large firms also offered disease management programs.³

Diabetes is a costly chronic condition frequently targeted for employer programming because it affects approximately 9% of those covered by employer-sponsored insurance.^{4,5} Average total medical spending among commercially insured persons with a diabetes diagnosis reached \$12,296 in 2020; it was \$4233 for those without a diagnosis.⁶

For individuals with diabetes, self-care, including healthy eating, physical activity, monitoring of blood sugar, medication adherence, and risk reduction (eg, smoking cessation), is important for day-to-day management.⁷ Diabetes self-management education and support (DSMES), a diabetes-specific, structured, and tailored disease management program typically offered through hospital- or clinic-based sites, can help individuals develop their knowledge, skills, and confidence for self-management.⁸ Participation in DSMES is associated with short-term improvements in hemoglobin A_{1c} (HbA_{1c}), reduction in onset or severity of diabetes-related complications, improved quality of life, and lower health care utilization or costs.^{8,9} DSMES services are underutilized, with disparities in use by ethnicity, sex, rurality, and income.¹⁰⁻¹³

One strategy for increasing DSMES access is digital delivery, which has accelerated since the COVID-19 pandemic began in 2020. However, understanding of best practices for the implementation of digital health solutions and their impact on enrollees' outcomes remains limited. This descriptive study examined the May 2021 implementation of Omada for Diabetes (O4D), a digitally based, asynchronous DSMES program, which was offered by the State Employee Group Insurance Program (SEGIP), a large, self-insured employer covering approximately 130,000 individuals throughout Minnesota. Specifically, we described the development, implementation, and effectiveness

ABSTRACT

OBJECTIVE: To evaluate the implementation of a digitally based diabetes management program by a large, self-insured employer in Minnesota from May 2021 to April 2022.

STUDY DESIGN: Descriptive analysis.

METHODS: We described the development, implementation, and effectiveness of a communications strategy to promote program enrollment in the initial year. Using administrative claims data, we analyzed the demographic and clinical attributes associated with an eligible member's enrollment. Finally, we empirically assessed whether expanding the choice of modalities through which enrollees accessed diabetes self-management education and support (DSMES) increased overall utilization and addressed geographic disparities.

RESULTS: Although digital health program applications responded to the timing of the communications campaigns, overall program enrollment in absolute terms was low compared with the size of the eligible population. Among those eligible, female and employee subscribers were more likely to enroll. Overall, DSMES use increased slightly during the initial year, but we did not observe significantly higher rates of use among members in rural areas following the digital health program launch.

CONCLUSIONS: This study offers new insights to employers and health plans related to supporting digitally based disease management program implementation and enrollee engagement.

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of a communications strategy for promotion of the new O4D program, including key lessons from employee focus groups. We also examined applications, eligibility, and enrollment and conducted a claims-based analysis to identify demographic and clinical attributes associated with enrollment in O4D alongside traditional DSMES offerings also covered by the employer. Finally, we assessed whether the addition of O4D expanded overall DSMES utilization and addressed disparities in use among rural enrollees. This study offers new insights to employers and health plans related to investment in digitally based disease management programs and enrollee engagement.

BACKGROUND

Organizational Context

SEGIP provides health, dental, and life insurance and other benefits to its active employees, early retirees, and their dependents. Nearly all enrollees reside in Minnesota or nearby communities, with approximately 54% residing outside the Twin Cities metropolitan area. SEGIP contracts with third-party administrators to manage the medical benefit and a pharmacy benefit manager (PBM) to manage the prescription drug benefit. In 2018, SEGIP introduced Advantage Value for Diabetes, a value-based insurance design to lower out-of-pocket costs for high-value services and goods (eg, prescriptions, dietitian visits, testing supplies). SEGIP also invests in several supplemental digital programs, including an incentive-based well-being program administered by Virgin Pulse, as well as Omada for Prevention, which launched in 2015.

Adoption of the O4D Program

In May 2021, SEGIP expanded its support of digital health programming to include O4D. This Association of Diabetes Care & Education Specialists–accredited program includes a structured DSMES curriculum (tailored for individuals with type 1 or type 2 diabetes), coaching from a certified diabetes educator, technology for checking blood glucose levels, personalized support for medication self-management, and an online peer group. Lessons and coaching focus on multiple topics, including lifestyle behaviors to manage HbA_{1c}, medication therapy and counseling, and support for coexisting behavioral health needs. Participation in O4D is voluntary. Interested individuals complete a screener and can enroll if eligible. Omada staff assign enrolled individuals to a coach and peer group and, if applicable, send them a scale and continuous glucose monitor. Omada submits claims to SEGIP's third-party administrators for a negotiated monthly payment when a member engages in 3 or more actions (eg, weighing in, logging into the mobile app or website, communicating with a coach, having one's glucose tracked) with O4D during the most recent 3-month period (internal communications).

TAKEAWAY POINTS

This study offers new insights on investment in digitally based disease management programs and enrollee engagement. Key takeaways include the following:

- ▶ Know your audience: Findings from employer-specific focus groups can lead to changes in program messaging. Using communications best practices enhances message uptake.
- ▶ Define success for your population: Uptake may vary depending on existing benefits, access to programming, and structural factors. Utilization may vary by individual characteristics and preferred modality/choice.
- ▶ Broaden the evidence base for programs: Understanding factors that shape program uptake is critical. Knowing what outcomes are important to employers and employees will result in highly useful evaluations.

METHODS

Data and Measures

Our evaluation of a promotional campaign for O4D and subsequent engagement with the program by enrollees relied on 4 secondary information sources. First, we used results from employee focus groups conducted by a Minnesota Department of Health–contracted research partner to inform SEGIP's communications strategy. Second, we engaged with SEGIP administrators to collect internal administrative data to evaluate communications delivered to members and corresponding measures of marketing reach and effectiveness. Third, we obtained aggregated data from Omada on members' eligibility, application, and enrollment during the first 12 months of the program, as well as demographic and health status information. Finally, we utilized deidentified medical claims from May 1, 2020, to April 30, 2022 (1 year prior to and following the O4D launch), of a cohort of SEGIP members with a diabetes diagnosis to examine demographic and clinical characteristics associated with employees' engagement with this new digital health offering alongside traditional DSMES. We used the validated claims-based algorithm from the Chronic Conditions Data Warehouse to identify 6965 individuals with diabetes in the SEGIP population.¹⁴

We constructed a categorical measure to capture each individual's DSMES use (receipt of traditional health system–based DSMES [delivered in person or via telehealth]), O4D, or no DSMES) during the 2-year period. Traditional DSMES use was defined as a bill using *Current Procedural Terminology (CPT)* code G0108 or G0109. O4D use was defined as a bill from Omada Health Inc using a proprietary and unique combination of *CPT* codes and modifiers. Individuals with claims that indicated both traditional DSMES and Omada use were classified as O4D based on a hierarchical classification. Individuals who did not have claims for either traditional DSMES or Omada were coded as having no DSMES use.

Administrative claims data included information on an enrollee's age as of March 2023, sex (male or female), subscriber status (self/employee, spouse, dependent), and zip code of residence, which we used to distinguish urban and nonurban residence using rural-urban commuting area codes (1-3: metro area residence; 4-10, 88, and 99: nonmetro).¹⁵ We also constructed a modified Charlson

Comorbidity Index (CCI) score (excluding diabetes diagnosis) to control for enrollees' health status.^{14,16}

Using bivariate analyses, we examined the association between DSMES use and age, sex, subscriber status, metropolitan status, and CCI score category. For individuals who utilized any DSMES during the 2-year period, we estimated a binary logit model to estimate the probability that an individual chose Omada, controlling for other demographic and health status factors. Data analysis was performed using SAS 9.4 (SAS Institute Inc).

RESULTS

Communications Strategy Development and Deployment

To promote the new O4D program, SEGIP administrators developed a communications strategy in collaboration with Omada and the Minnesota Department of Health, along with input from University of Minnesota–based research team members. During the first year O4D was offered, SEGIP coordinated 2 communication campaigns to promote engagement in both Omada programs.

Promotional messages were informed by 6 employee focus groups conducted virtually in early 2021 with 30 total participants. Minnesota Department of Health staff and the research partner developed focus group questions to identify effective messaging and communication outreach strategies to promote the DSMES benefit, understand participation barriers, and test specific messages to promote O4D, including potential differences for enrollees in urban vs rural locations. The research partner conducted thematic analyses of focus group data.

The focus groups demonstrated the importance of using language that emphasized the collective vs individual (“we” vs “me”), underscored what can be learned from engaging in O4D (eg, what knowledge/skills are gained from participating), and highlighted that communications should use positive vs fear-based framing related to managing diabetes. Focus group participants also noted the importance of clearly articulating DSMES insurance coverage, specifying who to contact with questions, providing a website link with more information, ensuring that messages were culturally adapted, and using simple messaging without too many graphics.

In May and June 2021, SEGIP conducted its first communications campaign; the second campaign occurred from January through March 2022. Communications varied in 4 dimensions: messenger (SEGIP or Omada), recipient population (broad or narrow), modality (website, email communication to employee, mail to home address), and message framing.

Table 1 summarizes communications tactics to promote O4D. During the first campaign, SEGIP communicated with its enrollee population about Omada using 4 distinct communication approaches. It incorporated information about Omada on its benefits web page using language to motivate engagement through maximizing one's benefits and potential financial incentives through earning points as part of its incentive-based well-being program. SEGIP also

integrated information about Omada into its Advantage Value for Diabetes communications sent to members with newly diagnosed diabetes. Third, links to Omada's website were provided by SEGIP's plan administrators. Fourth, SEGIP introduced employee members to O4D through a wellness email that covered multiple topics. This final communication was delivered to 53,352 individuals. SEGIP administrators reported that 46% opened this message and 5% clicked on at least 1 of 13 links included in the message. These rates are similar to SEGIP's median open and click rates for health-related messaging overall and higher than other state and local median benchmark data (25% and 4%, respectively).^{17,18}

Omada, in coordination with SEGIP administrators, also provided communications to targeted enrollee segments during this first campaign. Specifically, Omada emailed SEGIP members who previously applied for the Omada for Prevention program (targeting those with prediabetes) but were ineligible because of a preexisting diabetes diagnosis. Although this communication had a lower open rate (39%), Omada reported a higher click rate (17%). Also, Omada sent a SEGIP cobranded postal mailer about O4D to 4030 members who had a recent claim for diabetes medications, utilizing established research partnerships between SEGIP, Omada, and SEGIP's PBM.

Table 1 also summarizes communication efforts from the second campaign in early 2022, which coincided with the common practice of setting New Year health behavior resolutions. Strategies included a virtual meeting with SEGIP wellness champions, encouraging them to promote the O4D program within state agencies, and email communications to all employee members about SEGIP's focus on health and well-being, including direct promotion of Omada. Additionally, a separate follow-up email communication was made to employee members residing in nonurban communities (n = 13,671). This communication was motivated by a preliminary analysis of SEGIP claims data suggesting lower DSMES utilization among individuals in nonmetro areas (authors' unpublished analysis for the Minnesota Department of Health). Communication to the nonmetro audience yielded a 38% open rate and 2% click rate—considerably lower than the overall SEGIP population. Finally, Omada distributed a second round of postal mailers to SEGIP members with diabetes based on the PBM data (n = 3965).

Omada Program Engagement and Communications Timing

The **Figure** shows monthly counts of the number of applicants to O4D and Omada for Prevention combined, the number eligible for O4D, and the number who enrolled and completed at least 1 lesson based on Omada administrative data. Omada uses a single application system and screener for both programs to triage individuals appropriately. Eligibility for the O4D program is based on applicants' responses to questions about HbA_{1c} or fasting blood glucose laboratory values and self-reported diabetes diagnosis. Between May 2021 and April 2022, Omada received 940 applications from SEGIP members for its diabetes prevention program and O4D. Of these,

TABLE 1. Communications Strategy Development, Implementation, and Reach^a

Communication activity	Campaign 1: May-June 2021				Campaign 2: January-March 2022			
	1	2	3	4	5	6	7	8
Messenger								
SEGIS	X	X				X	X	
Omada			X	X	X			X
MDH					X			
Modality								
Email		X	X			X	X	
Mailer				X				X
Special	Webpage				Virtual meeting			
Audiences								
All employees	X	X				X		
All dependents	X							
Members using diabetes medications on PBM list				X				X
Special			Previous Omada Prevent applicants with diabetes ^b		Wellness champions within state agencies		Employees residing in nonurban areas	
Reach	NA	53,352	NA	4030	~25	50,822	13,671	3965
Open/click rate	NA	46%/5%	39%/17%	NA	NA	43%/6%	38%/2%	NA
Message content or framing	Engaging in Omada diabetes support helps you to earn points to lower insurance deductible in 2022!	Make the most of your benefits: Introducing Omada diabetes management support. Personalized program for subscriber members and dependents	Omada now has a program to support people with diabetes.		Overview of diabetes and SEGIP benefits; Omada overview	Multitopic communication on well-being program and rewards; promoted Omada programs as one of 3 key steps to bring in a healthy new year	Omada for Diabetes promoted as a personalized way to support people at no cost	Framed around "healthy is possible" with a list of positive health goals that can be achieved through the program. Promoted as a personalized program and at no cost

MDH, Minnesota Department of Health; NA, not available; PBM, pharmacy benefit manager; SEGIP, State Employee Group Insurance Program.

^aAuthors' analysis of summary information provided by SEGIP.

^bApplicants to Omada Prevent were deemed ineligible if they had a preexisting diabetes diagnosis. The introduction of Omada for Diabetes provided a new option for SEGIP members with diabetes.

272 individuals were eligible for O4D, and 216 enrolled (defined as having completed at least 1 session). As seen in the Figure, the number of applications increased immediately following both communication campaigns.

Table 2 includes self-reported demographic and health status summary statistics shared by Omada. Enrollees in O4D were more likely to be female (57.4%) and aged 45 to 60 years (56.5%). Of the enrollees, 77.8% identified as White, 6.5% identified as Black, 5.1% identified as Asian or Pacific Islander, 3.7% identified as Hispanic, and 6.9% identified as other race/not available. Among enrollees, 72.2% reported a body mass index (BMI) of 30 or greater, and 18.5% had a BMI of 25 to 29.9.

Omada Engagement, DSMES Utilization, and Urban-Rural Disparities

Next, we examined demographic and clinical characteristics associated with engagement with O4D alongside traditional DSMES offerings (in-person and telehealth combined) using claims data (**Table 3**). Across this 2-year period, 19.0% of individuals with a diabetes diagnosis utilized DSMES from a traditional provider, 2.9% engaged with the O4D program, and 78.1% did not engage in any DSMES services. When comparing DSMES utilization in the year before with the year after the launch of O4D, the percentage of individuals with at least 1 claim for traditional DSMES or O4D increased modestly, from 11.7% to 13.9%. This increase was driven

MANAGERIAL

TABLE 2. Omada for Diabetes Enrollee Attributes During Initial Year^a

Omada for Diabetes enrollee attribute	%
Sex	
Female	57.4
Male	42.6
Age in years	
≤44	21.3
45-60	56.5
61-75	22.2
Race and ethnicity	
White	77.8
Black	6.5
Asian or Pacific Islander	5.1
Other	4.6
Hispanic	3.7
Not available	2.3
Baseline body mass index	
18.5-24.9	9.3
25.0-29.9	18.5
≥30	72.2

^aDemographic information provided by Omada for 216 enrollees. Source: Omada administrative summary data.

mainly by individuals who had not used DSMES during 2020, the year before O4D was launched.

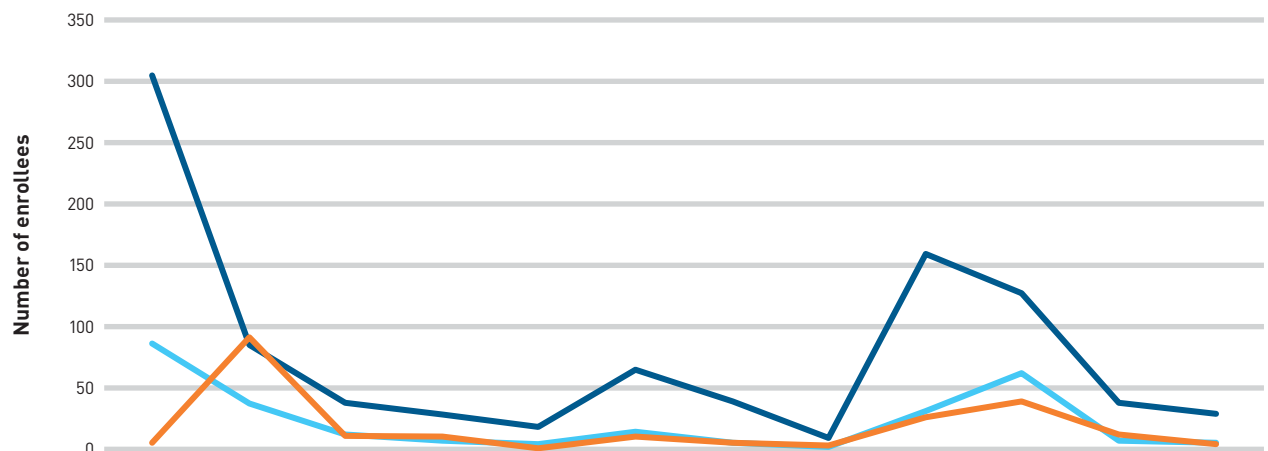
Table 3 also shows that age, female sex, subscriber status, and metropolitan residence are all statistically associated ($P < .05$) with use of DSMES. We did not observe a relationship between DSMES status and overall health risk as captured by the CCI score. Variation in estimated prevalence of DSMES use (O4D, traditional DSMES, no DSMES) suggests that SEGIP enrollees who are older, male, and living in nonmetropolitan areas are less likely to engage in either DSMES delivery type.

Finally, we estimated a parsimonious binary logit model of an enrollee's decision of whether to engage with Omada as a function of demographic and health status factors. Among the subset of individuals with at least some DSMES use during the 2-year period ($n = 1525$), only female sex and employee subscriber status were positive predictors of O4D program use. No other factors demonstrated statistically significant relationships.

DISCUSSION

Ever-evolving population health management strategies used by employers and insurers now include adopting digital health solutions to expand enrollees' choices for chronic condition

FIGURE. Applications, Eligibility, and Enrollment in Omada for Diabetes in SEGIP Population^a



	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022
— Applicants	305	85	38	28	18	65	39	9	159	127	38	29
— Eligible	86	37	12	7	4	14	5	2	31	62	7	5
— Enrolled	5	91	11	10	1	10	5	3	26	39	12	4

SEGIP, State Employee Group Insurance Program.

^aA single application process is used for both Omada Prevent and Omada for Diabetes to maximize the likelihood of sorting individuals into the most appropriate program given their risk factors and/or condition status. Eligible and enrolled categories are specific to Omada for Diabetes. Given continuous enrollment, application, eligibility, and enrollment may span 2 months.

Source: Authors' tabulations from Omada administrative records and SEGIP communications.

management, including DSMES in the context of diabetes management. However, evidence about implementation, uptake, and program effectiveness in real-world settings is limited.

Our evaluation generated some key lessons for employers and other stakeholders related to implementing a digitally based DSMES program. First, know your audience. Implementation of disease management solutions requires partnerships to provide deliberate, coordinated communications and positive messaging to encourage engagement by enrollees. SEGIP, its third-party administrators, and Omada utilized a variety of passive and active communication strategies that varied by population targeted, modality, and message framing. Although program implementation efforts did not include communications with SEGIP's other in-network providers, this could also serve as a viable pathway to increase awareness of available resources. However, for some providers who also deliver DSMES, stand-alone digital solutions may be perceived as potential competition.

Second, define success for your population. Employers and plans should establish expectations for potential demand for digitally based disease management that account for existing alternatives and market conditions. Despite a well-developed communication strategy, SEGIP did not experience high take-up of this digital program or greatly expanded overall DSMES use. Demand for the program may have been lower than expected if, for example, enrollees faced digital access barriers (eg, lower comfort levels with mobile health solutions).¹⁹ Our analysis also did not reveal strong spillover effects. That is, offering and aggressively promoting a new digitally based DSMES option did not result in significant increases in traditional DSMES use. One possible reason is that traditional DSMES use requires a provider referral, which may create a potential barrier. DSMES provider capacity constraints could also reduce access even if an individual wanted care. Another important consideration is that this intervention was deployed in an employer setting with a robust set of offerings to support individuals with diabetes, including established DSMES coverage, medication therapy management, and a value-based insurance design to reduce financial barriers. With these existing investments, eligible individuals may have perceived lower incremental benefits from this new program.

When considering potential demand, there may also be value in evaluating the market environment. Many health care delivery organizations and health plans in Minnesota have made significant investments to promote effective diabetes management

because of public reporting initiatives (eg, Minnesota Community Measurement). Rates of DSMES utilization in this population are already higher than what is reported nationally, so it may be more difficult to further increase DSMES utilization rates.²⁰ Future work could examine whether take-up rates vary across types of employer settings (eg, health benefits generosity) or geographic markets with varied traditional DSMES provider capacity or lower DSMES baseline utilization.

Third, many digital health solutions, including Omada, are evidence-based in their designs, with many positive features to encourage effective self-management of diabetes. Yet, the evidence base for quantifying specific health and economic effects of such programming in the postpandemic period remains limited. Evaluations may also need to consider, when defining success, the presence of heterogeneous effects in outcomes considered (eg, for whom do these programs work most effectively, assessing differences

TABLE 3. Demographics of Individuals Participating in DSMES Among SEGIP Enrollees^a

Demographic	Total (N = 6965)	Omada use (n = 201; 2.9%)	DSMES use (n = 1324; 19.0%)	No DSMES claims (n = 5440; 78.1%)	P
Age in years					< .0001
≤ 44	14.2%	14.4%	19.7%	12.8%	
45-60	40.1%	51.2%	39.9%	39.7%	
> 60	45.7%	34.4%	40.4%	47.5%	
Sex ^b					< .0001
Female	41.9%	56.2%	45.3%	39.9%	
Male	58.6%	43.8%	54.7%	60.1%	
Subscriber type					< .001
Self	65.2%	90.0%	65.9%	64.1%	
Spouse, dependent, or multiple	34.8%	10.0%	34.1%	35.9%	
Residence ^c					.0007
Metro	67.8%	71.6%	71.9%	66.7%	
Nonmetro	32.2%	28.4%	28.1%	33.3%	
CCI score					.81
0	61.9%	65.7%	62.2%	61.7%	
1	20.1%	19.9%	20.5%	20.0%	
2	9.9%	8.5%	9.4%	10.1%	
≥ 3	8.1%	5.9%	7.9%	8.2%	

CCI, Charlson Comorbidity Index; CPT, Current Procedural Terminology; DSMES, diabetes self-management education and support; SEGIP, State Employee Group Insurance Program.

^aDiabetes management was hierarchical. Those with Omada use may have only used Omada services or also had DSMES use. Those with DSMES use only had DSMES use (but not Omada use). Omada use was defined as a bill from Omada Health Inc using a combination of CPT codes and modifiers. DSMES use was defined as a bill using CPT G0108 or G0109. Age indicates the individual's age as of June 2023. Residence was categorized based on the individual's zip code on the enrollment record and linked to rural-urban commuting area codes from the US Department of Agriculture. A value of 1-3 indicated a metro residence, whereas a value of 4-10, 88, or 99 was considered nonmetro.¹⁶ CCI score excludes the weight of a diabetes diagnosis.

^bn = 1 individual with sex categorized as unknown (grouped with male).

^cn = 221 individuals with multiple rural-urban commuting area code categories (grouped with nonmetro counties).

Source: Authors' analysis of SEGIP claims data from May 2020 to April 2022.

in how much employees value choice) and whether these programs mitigate or exacerbate socioeconomic-based disparities in clinical diabetes or other related outcomes. Low take-up rates and lack of information on enrollees' race, ethnicity, or language within specific employer organizations may create challenging conditions for undertaking rigorous quantitative evaluations with sufficient statistical power to detect improvements and measure disparities.

Limitations

Our study was subject to a few key limitations. First, insights were based on experiences of a single large employer with a mature set of diabetes-related programming. Experiences may differ in other employer contexts. Second, we examined implementation during the program's initial year (May 2021-April 2022), which coincided with the second year of an active public health emergency. Although higher participation rates might have been expected, given individuals' greater familiarity with telehealth and digital technologies, other factors may have influenced this outcome, such as fatigue around digital connectivity or prioritization of other issues. Third, due to data limitations, we were unable to examine differences in enrollees' engagement by income or race/ethnicity.

CONCLUSIONS

This study examined a large, self-insured employer's experience with implementing a digitally delivered DSMES solution that complemented existing diabetes prevention and management solutions offered by the employer. Despite a comprehensive communications campaign, including targeted messaging to eligible enrollees in nonmetropolitan areas, program enrollment in absolute terms was low compared with the size of the eligible population, with female and employee subscribers more likely to enroll in the digitally based DSMES program. Overall, DSMES use increased modestly, from 11.7% prior to O4D launch to 13.9% afterward; however, we did not find evidence to suggest significantly higher rates of use among members in rural areas following O4D launch. With the diffusion of digital health solutions for chronic condition management, including diabetes, many opportunities exist for future evaluations that can inform best practices related to implementation and measuring program effectiveness on population health and economic outcomes. ■

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