User engagement with DiabeteWise: Forging a novel, unbiased, person-centered pathway to diabetes access and uptake

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Abstract

Background: Despite shown benefits of diabetes technologies for people living with diabetes, barriers to device education and uptake can prevent the realization of these potential benefits. DiabetesWise is an unbranded, data-driven online resource that tailors device recommendations based on preferences and priorities of people with insulin-requiring diabetes.

Objective: To examine engagement with DiabetesWise and its correlates.

Methods: A sample of 458 participants (Mage=37.1, SD=9.73; 66% female; 81% type 1 diabetes) with minimal diabetes device use at enrollment were invited to use DiabetesWise. Their website activity was tracked, and they completed online surveys. Chi-square and t-tests evaluated correlates of engagement.

Results: Most participants logged into DiabetesWise at least once (69%), which was associated with increased likelihood of starting a new device within 6 months (13.7% vs. 1.5%, p=.005). Logging in was also associated with being female, having public/no insurance, having lower income, and receiving care in a private practice/community health setting. Nearly 38% logged in multiple times, which was more common for participants receiving diabetes care through primary care. Most who logged in used the Check Up tool to assess current device needs and preferences (85%), of whom 74% were using meter and injections. Most Check Up recommendations were for meter and pump (63%), followed by sensor and pump (35%), then sensors with smart pump (2%). Cost was the most frequent priority for device decisions (51%). Nearly half the participants who completed the Check Up reported at least moderate diabetes distress (41%).

Conclusions: DiabetesWise is an innovative, unbiased pathway to promote diabetes device education and awareness. Highest initial engagement was observed among people with fewer resources; repeated use was observed among those receiving diabetes care through primary care. DiabetesWise may help offset disparities in diabetes technology access and uptake.

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Background: Despite shown benefits of diabetes technologies for people living with diabetes, barriers to device education and uptake can prevent the realization of these potential benefits. DiabetesWise is an unbranded, data-driven online resource that tailors device recommendations based on preferences and priorities of people with insulin-requiring diabetes.

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Results: Most participants logged into DiabetesWise at least once (69%), which was associated with increased likelihood of starting a new device within 6 months (13.7% vs. 1.5%, *p*=.005). Logging in was also associated with being female, having public/no insurance, having lower income, and receiving care in a private practice/community health setting. Nearly 38% logged in multiple times, which was more common for participants receiving diabetes care through primary care. Most who logged in used the Check Up tool to assess current device needs and preferences (85%), of whom 74% were using meter and injections. Most Check Up recommendations were for meter and pump (63%), followed by sensor and pump (35%), then sensors with smart pump (2%). Cost was the most frequent priority for device decisions (51%). Nearly half the participants who completed the Check Up reported at least moderate diabetes distress (41%).

Conclusions: DiabetesWise is an innovative, unbiased pathway to promote diabetes device education and awareness. Highest initial engagement was observed among people with fewer resources; repeated use was observed among those receiving diabetes care through primary care. DiabetesWise may help offset disparities in diabetes technology access and uptake.

Keywords: type 1 diabetes; type 2 diabetes; insulin; continuous glucose monitor (CGM); insulin pump; diabetes distress; DiabetesWise

Introduction

Despite shown benefits of diabetes technologies for people living with diabetes,[1–4] barriers to device education and uptake can prevent the realization of these potential benefits. Such barriers include cost, insurance coverage, and provider attitudes,[5] which can contribute toward disparities based on socioeconomic status,[6] racial/ethnic background,[7,8] gender,[8] and geographic regions.[8] Device uptake is often limited by complexities related to restrictions in combining devices between device models/brands, constant changes in devices and their availability, as well as narrow and convoluted pathways for obtaining devices. Diabetes technology education and steps for device uptake are traditionally created by device companies, health care systems, and/or medical providers. These entities may hold competing interests related to device uptake and have limited resources that preclude them from providing education and awareness broadly and equitably. DiabetesWise is an online resource designed to address and overcome barriers to device uptake for people living with insulin-requiring diabetes (Figure 1). It was created with funding from the Helmsley Charitable Trust and is brand-neutral, presenting the benefits of all devices on the market, without ties to device companies. DiabetesWise provides a novel pathway to education and resources for technology options best suited to an individual's unique circumstances, needs, and preferences. The current study sought to examine how users engaged with DiabetesWise and the factors related to types of engagement.

DiabetesWise includes several features designed to inform and empower users. The Check Up feature includes a short 5-item survey generated from results from multiple studies[9–11] and user experiences (Figure 2).[12,13] Recommendations for device combinations are generated from the Check Up results using an algorithm that is based on prior research on diabetes devices,[9–11] user experiences,[12,13] and diabetes distress.[12] The results are presented with an

explanation for the specific recommendation and how it directly links to participant responses. Another unique aspect of DiabetesWise are the personal, real-world stories (referred to as “wisdom”) of diabetes management experiences with various devices. Many people living with diabetes do so in isolation, unaware of other people struggling with similar experiences. These stories help users feel connected and validated. This wisdom emphasizes the personalized nature of diabetes management, reflects variability in diabetes management preferences, and empowers users to identify and prioritize their personal needs and goals. DiabetesWise also offers a Device Finder, where users can search for various device combinations based on their own personal priorities (e.g., ease of use, comfort, active lifestyle). The Device Finder can also compare various devices and device combinations to promote informed decision-making. These features were carefully designed to empower people with diabetes to understand their options and make informed decisions about their self-management choices. Device information is updated continuously as technologies evolve and new devices emerge. DiabetesWise has been linked to increased requests for prescriptions for new diabetes devices and reduced diabetes distress.[14]

To explore how users engage with the DiabetesWise website and factors related to engagement, we examined: 1) rates of initial and repeated logins, 2) factors associated with initial and repeated logins, and 3) responses to the Check Up and subsequent Check Up recommendations. Findings from this study will reveal how people might interact with such platforms and identify factors related to the need and potential benefit for such resources.

Methods

Recruitment

Participants were recruited through online postings on social media (Facebook) and Google word search ads. Inclusion criteria included: at least 18 years of age, diagnosis of type 1

or type 2 diabetes, using insulin, and US residency. Exclusion criteria included: regular CGM use (5 days per week or more) and/or automated insulin delivery system (“smart pump”) use at the time of enrollment. Eligible participants provided consent prior to study enrollment.

Data Collection

Once enrolled, participants completed an online baseline survey and at-home blood collection to measure HbA1c. They then received instructions to access the DiabetesWise website. For this study, the public facing DiabetesWise website was cloned and study access required a login and password, provided by the study coordinator. Only study participants could access the cloned website, which tracked website activity (e.g., logins, pages visited, features utilized). All study activities were conducted remotely, allowing for a geographically diverse sample and minimal participant burden. Participants could receive up to $250 in electronic gift card incentives based on completion of study activities. The study protocol was approved by the Stanford University Institutional Review Board (#52851).

Measures

Demographic measures of gender, age, race/ethnicity, education, employment, income, insurance type, diabetes type, provider type, medical setting, and current device use were all captured via self-report survey at baseline.

Check Up data are based on responses provided by participants who used this feature of DiabetesWise. The Check Up tool opens with the following prompt: “Do your devices still work for your life? Answer a few questions to personalize how you can make your diabetes device routine easier and more effective.” The first item is “What device combo are you currently using?” after which every possible device/non-device combination is listed for selection.

The second and third items in the Check Up are the Diabetes Distress Scale (DDS-2).[15]

This brief scale includes two items that participants are asked to rate how much of a problem or hassle it has been during the past month: “Feeling overwhelmed by the demands of living with diabetes” and “Feeling that I am often failing with my diabetes routine.” Response options range from 1 “not a problem” to 6 “a very serious problem.” An average score of three or greater indicates moderate-to-high distress.

The fourth Check Up item asks participants about their top priority when choosing diabetes devices and includes these options: avoiding lows (hypoglycemia), easy to use, cost, comfort on my body, and latest and greatest technology. The final item is “Which of these concerns is the most important to you when thinking about diabetes devices and technologies?” The response options include: 1) I feel nervous to rely on technology; 2) I do not like it when people notice or comment on my diabetes; 3) I do not understand what to do with the information from the devices; and 4) I don’t have any of these concerns.

Participants also self-reported on whether they started using a new diabetes device/system 6 months after enrollment. Follow-up data were provided by 279 participants.

Statistical Analysis

Chi-square and t-test analyses were used to evaluate correlates of DiabetesWise engagement. Two dichotomous variables were used to represent two types of engagement. The first dichotomous engagement variable (initial login) represented whether participants logged in at least once (1) or not at all (0). The second dichotomous variable (repeated logins) was created only for participants who had logged in at least once, which represented participants who logged in repeatedly/multiple times (1) and participants who only logged in once (0). All analyses were conducted in SPSS version 27.

Results

The sample included 458 participants (Table 1). All participants were insulin-requiring and most had a diagnosis of type 1 diabetes (81%). The majority of participants self-identified as female (66%) and non-Hispanic White (82%). Ages ranged from 18 to 69 years with an average participant age of 37 years. Most participants had never used CGM (59%) and many were using insulin pens (52.4%), followed by insulin pumps (24.2%) and syringes (23.1%), with only one participant (0.2%) using an inhaler for insulin delivery at the time of enrollment. Participants were mostly employed (72%) with private insurance (78%). More than one third of participants received their diabetes care from a primary care provider (38%); most reported receiving their diabetes care through private and community health centers (59%) rather than academic settings or large medical centers.

Initial Login

Most participants (68.8%) logged into DiabetesWise at least once. Those who logged in at least once were more likely to be female (69.8% vs. 58.7%, p=.020), have no health insurance or coverage through public insurance (25.1% vs. 16.1%, p=.032), were less likely to report an annual income above $100,000 (16.6% vs. 26.1%, p=.020), and receive diabetes care through private practice/community health settings rather than large/academic medical centers (62.5% vs. 50.3%, p=.014) compared to participants who never logged into DiabetesWise.

Among participants who provided follow-up data 6 months later, significantly more of the participants who had logged in at least once had started a new device compared to those who did not log in (13.7% vs. 1.5%, p=.005).

Repeated Logins

Of the participants who logged in at least once, over a third (37.5%) logged in again. The highest number of logins was 31 (n=1), followed by 10 (n=2). The median and mode logins were

1. Participants who logged in multiple times compared to just once were more likely to receive diabetes care through primary care rather than specialty/endocrinology services (44.9% vs. 31.5%, *p*=.016). No other factors were significantly associated with repeat logins.

Check Up Tool Engagement

Most participants who logged into DiabetesWise used the Check Up tool (85.4%). Whether or not participants completed the Check Up tool was not significantly related to any baseline characteristics.

Of the participants who completed the Check Up, 74.0% were currently using a meter and injections, 21.2% were using a meter and an insulin pump, 3.3% were using a sensor and injections, 1.1% were using a sensor and an insulin pump, and 1 participant (0.4%) was using a sensor and a smart pump. Given the exclusion criteria of regular sensor/CGM use and/or use of automated insulin delivery systems, it is likely that endorsed CGM use was inconsistent or that CGM or automated insulin delivery system use began after enrollment but before completing the Check Up.

Responses to the brief diabetes distress scale (DDS-2) indicated that 40.8% of the participants who completed the Check Up were experiencing at least moderate diabetes distress at the time based on a score of 3 or greater. The average diabetes distress score was 2.81 (SD=1.05).

Cost was the most frequently endorsed priority when choosing diabetes devices (50.6%), followed by comfort on the body (17.5%), ease of use (15.6%), avoiding lows (11.2%), and having the latest and greatest technology (5.2%). Most participants endorsed no concerns related to diabetes devices and technologies (54.3%), while 24.2% were most concerned about people noticing or commenting on their diabetes, 11.5% were nervous to rely on technology, and 10.0%

were concerned that they do not understand what to do with the information from the devices.

Based on participant responses, most Check Up recommendations were for a meter and insulin pump (63.2%), followed by sensor and insulin pump (35.3%) and finally sensor with smart pump (1.5%).

Discussion

Principal Results

Diabetes device use is a personal choice, ideally informed by education about available options so that each individual can choose the combination that best suits their personal priorities and diabetes management goals. However, many barriers to device awareness, education, and uptake exist. Prior findings have demonstrated that racial-ethnic health disparities are exacerbated by perceptions that providers are gatekeepers of information and prescription access to technology and that providers do not employ shared decision-making for technology.[16] Providers themselves may struggle to keep up with rapid advancement in diabetes technology and may not always be in the best position to provide up-to-date device education and resources to their patients. DiabetesWise seeks to shift the power in device decisions and uptake toward the person living with diabetes. The current findings indicate that most people invited to use this platform engage with it and that even a single instance of engagement is related to diabetes device uptake. Engagement is particularly high among groups with limited resources and/or those at increased risk. Of those who logged in, over a third continued to use the platform during the study period. These results demonstrate an interest in DiabetesWise and the resources it offers, especially among people who may not have access to similar content or education through their diabetes care.

Building upon prior findings that offering DiabetesWise leads to increased requests for

device prescriptions and decreased diabetes distress over time,[14] the current results demonstrate that even a single login to DiabetesWise is associated with a nearly 10 times increase in the likelihood of device uptake within 6 months. This finding is particularly powerful given that DiabetesWise is a free resource with no financial interests related to device uptake. As such, understanding the factors related to engagement could be critical in determining who this resource is already of interest to as well as how it might be widely disseminated to all who might benefit.

Study findings showed that people without private insurance and those with lower incomes were more likely to use DiabetesWise. Additionally, for users of the Check Up tool, cost was the top priority in their device decision-making. Diabetes cost considerations extend beyond the simple finances required to obtain devices to include identifying the precise costs of the devices as well as costs related to time required to start a new device.[17] Given the marked disparities in device use related to socioeconomic status,[6,7,16,18,19] it is unsurprising that insurance coverage is a key component to combatting disparities in diabetes device uptake.[20] Our findings suggest that this platform is of interest to those who are more likely to experience cost barriers and might benefit most from education on devices, their costs, and guidance on how to address cost-related barriers. DiabetesWise extends previous efforts to provide non-brand, simple, and lower literacy diabetes resources[21] to the area of diabetes technology, which is particularly useful given the amount of mystery and vagueness traditionally surrounding device costs and options.

The finding that women are more likely to log into DiabetesWise than men might be expected, given women are more likely to use the internet for medical or health-related information.[22] This gender difference may also reflect variations between genders in relation to diabetes. For instance, women are more likely to use insulin pumps than men,[10] which may

indicate greater interest in learning about diabetes devices. Women with diabetes also tend to have greater diabetes knowledge than their male counterparts,[23] which may make them more eager to utilize new resources to expand their knowledge and apply it to device decisions. However, men are typically more willing to use information technologies in managing their diabetes than women.[24] Nevertheless, the fact that women are more inclined to initiate use of DiabetesWise may suggest it to be a valuable resource and support to them. Finding additional ways to support women living with diabetes is critical given that women receive less diabetes-related social support[25] and face higher psychosocial stress and a greater risk of complications[26] than men.

Our observation that people receiving diabetes care via primary care are more likely to log into DiabetesWise multiple times seems logical; prior findings that diabetes care needs are met more frequently in endocrinology settings than in primary care.[27] However, it is surprising that this is the *only* factor significantly associated with repeated logins. DiabetesWise may therefore function to fill a gap in diabetes technology education and resources within primary care. Primary care providers have expressed that they lack the resources to support CGM use among their patients with diabetes, particularly related to insurance navigation and CGM training for themselves and their teams.[28] Such needs on the provider side could be met by DiabetesWisePro (pro.diabeteswise.org), a health care provider platform that offers resources to increase provider awareness of devices and enhance readiness to prescribe, including information related to device options, insurance, and common myths. This provider-facing resource was developed after the current data were collected. Together, both DiabetesWise platforms can serve to instill awareness, knowledge, and confidence related to diabetes devices among people living with diabetes and providers in primary care.

As mentioned above, it is notable that repeat use of DiabetesWise was unrelated to any demographic, psychosocial, or clinical factors outside of diabetes care delivery setting. This suggests that DiabetesWise may serve to promote diabetes device awareness and education in a way that is more equitable than the traditional pathways. Indeed, it was surprising that socioeconomic factors such as income, insurance type, race/ethnicity that are known correlates of disparities in diabetes device uptake and use[6,8,16] were not associated with repeat login (although several of these factors were associated with initial login). Further research on how platforms like DiabetesWise might best be introduced to people living with diabetes as a part of routine care, which could minimize potential barriers to initial access.

Limitations

This study included several methodological strengths, including a large, nation-wide sample, data collection via validated surveys, and biophysiological data. Study limitations include lack of data on why participants did or did not interact with DiabetesWise and whether introduction to the platform via a research study compared to clinical practice might influence engagement.

Conclusions

The potential for broad impact of technological advancements for all people living with diabetes is clear. However, that potential can only be actualized if the access pathways are as innovative and focused on the individual as the technologies themselves. DiabetesWise introduces a novel approach to improving device awareness and optimizing care by recognizing and strategically overcoming the barriers to access that have hindered device education and uptake through traditional medical pathways. Dissemination of DiabetesWise could open the door to a new era for device decisions and patient empowerment in the years to come.

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Conflicts of Interest

No conflicts of interest to report.

References

1. Liberman A, Buckingham B. Diabetes Technology and the Human Factor. *Diabetes Technol Ther*. 2016;18 Suppl 1:S101-111. doi:10.1089/dia.2016.2510

2. Szypowska A, Ramotowska A, Dzygalo K, Golicki D. *Beneficial Effect of Real-Time Continuous Glucose Monitoring System on Glycemic Control in Type 1 Diabetic Patients: Systematic Review and Meta-Analysis of Randomized Trials*. Centre for Reviews and Dissemination (UK); 2012. Accessed March 29, 2022. http://www.ncbi.nlm.nih.gov/books/NBK98280/

3. Langendam M, Luijf YM, Hooft L, DeVries JH, Mudde AH, Scholten RJ. Continuous glucose monitoring systems for type 1 diabetes mellitus. *Cochrane Database Syst Rev*. 2012; (1). doi:10.1002/14651858.CD008101.pub2

4. Weissberg-Benchell J, Antisdel-Lomaglio J, Seshadri R. Insulin Pump Therapy: A meta-analysis. *Diabetes Care*. 2003;26(4):1079-1087. doi:10.2337/diacare.26.4.1079

5. Tanenbaum ML, Adams RN, Hanes SJ, et al. Optimal Use of Diabetes Devices: Clinician Perspectives on Barriers and Adherence to Device Use. *J Diabetes Sci Technol*. 2017;11(3):484-492. doi:10.1177/1932296816688010

6. Addala A, Auzanneau M, Miller K, et al. A Decade of Disparities in Diabetes Technology Use and HbA1c in Pediatric Type 1 Diabetes: A Transatlantic Comparison. *Diabetes Care*. 2021;44(1):133-140. doi:10.2337/dc20-0257

7. Agarwal S, Kanapka LG, Raymond JK, et al. Racial-Ethnic Inequity in Young Adults with Type 1 Diabetes. *J Clin Endocrinol Metab*. Published online May 8, 2020. doi:10.1210/clinem/dgaa236

8. McKergow E, Parkin L, Barson DJ, Sharples KJ, Wheeler BJ. Demographic and regional disparities in insulin pump utilization in a setting of universal funding: a New Zealand nationwide study. *Acta Diabetol*. 2017;54(1):63-71. doi:10.1007/s00592-016-0912-7

9. Tanenbaum ML, Adams RN, Iturralde E, et al. From Wary Wearers to d-Embracers: Personas of Readiness to Use Diabetes Devices. *J Diabetes Sci Technol*. 2018;12(6):1101-1107. doi:10.1177/1932296818793756

10. Tanenbaum ML, Hanes SJ, Miller KM, Naranjo D, Bensen R, Hood KK. Diabetes Device Use in Adults With Type 1 Diabetes: Barriers to Uptake and Potential Intervention Targets. *Diabetes Care*. 2017;40(2):181-187. doi:10.2337/dc16-1536

11. Wong JJ, Barley RC, Hanes S, et al. Parental Perspectives: Identifying Profiles of Parental Attitudes and Barriers Related to Diabetes Device Use. *Diabetes Technol Ther*. 2020;22(9):674-680. doi:10.1089/dia.2019.0492

12. Naranjo D, Tanenbaum ML, Iturralde E, Hood KK. Diabetes Technology: Uptake, Outcomes, Barriers, and the Intersection With Distress. *J Diabetes Sci Technol*.

2016;10(4):852-858. doi:10.1177/1932296816650900

13. Naranjo D, Suttiratana SC, Iturralde E, et al. What End Users and Stakeholders Want From Automated Insulin Delivery Systems. *Diabetes Care*. 2017;40(11):1453-1461. doi:10.2337/dc17-0400

14. Wong JJ, Addala A, Hanes SJ, et al. DiabetesWise: An innovative approach to promoting diabetes device awareness. *J Diabetes*. 2023;15(7):597-606. doi:10.1111/1753-0407.13401

15. Fisher L, Glasgow RE, Mullan JT, Skaff MM, Polonsky WH. Development of a Brief Diabetes Distress Screening Instrument. *Ann Fam Med*. 2008;6(3):246-252. doi:10.1370/afm.842

16. Agarwal S, Crespo-Ramos G, Long JA, Miller VA. "I Didn't Really Have a Choice": Qualitative Analysis of Racial-Ethnic Disparities in Diabetes Technology Use Among Young Adults with Type 1 Diabetes. *Diabetes Technol Ther*. 2021;23(9):616-622. doi:10.1089/dia.2021.0075

17. Addala A, Suttiratana SC, Wong JJ, et al. Cost considerations for adoption of diabetes technology are pervasive: A qualitative study of persons living with type 1 diabetes and their families. *Diabet Med J Br Diabet Assoc*. 2021;38(10):e14575. doi:10.1111/dme.14575

18. Everett EM, Wisk LE. Relationships Between Socioeconomic Status, Insurance Coverage for Diabetes Technology and Adverse Health in Patients With Type 1 Diabetes. *J Diabetes Sci Technol*. Published online October 9, 2021:19322968211050649. doi:10.1177/19322968211050649

19. Walker AF, Hood KK, Gurka MJ, et al. Barriers to Technology Use and Endocrinology Care for Underserved Communities With Type 1 Diabetes. *Diabetes Care*. 2021;44(7):1480-1490. doi:10.2337/dc20-2753

20. Ni K, Tampe CA, Sol K, Richardson DB, Pereira RI. Effect of CGM Access Expansion on Uptake Among Patients on Medicaid With Diabetes. *Diabetes Care*. 2023;46(2):391-398. doi:10.2337/dc22-1287

21. Ruelas VF, Walker MA, Peters AL. The STEPP-UP Project—Designing Low Literacy Teaching Tools for Use of Devices in a Minority Population. *Diabetes*. 2018;67(Supplement_1):2227-PUB. doi:10.2337/db18-2227-PUB

22. Smail-Crevier R, Powers G, Noel C, Wang J. Health-Related Internet Usage and Design Feature Preference for E-Mental Health Programs Among Men and Women. *J Med Internet Res*. 2019;21(3):e11224. doi:10.2196/11224

23. Lemes dos Santos PF, dos Santos PR, Ferrari GSL, Fonseca GAA, Ferrari CKB. Knowledge of Diabetes Mellitus: Does Gender Make a Difference? *Osong Public Health Res Perspect*. 2014;5(4):199-203. doi:10.1016/j.phrp.2014.06.004

24. Seboka BT, Yilma TM, Birhanu AY. Factors influencing healthcare providers' attitude and

willingness to use information technology in diabetes management. *BMC Med Inform Decis Mak*. 2021;21(1):24. doi:10.1186/s12911-021-01398-w

25. Bhaloo T, Juma M, Criscuolo-Higgins C. A solution-focused approach to understanding patient motivation in diabetes self-management: Gender differences and implications for primary care. *Chronic Illn*. 2018;14(4):243-255. doi:10.1177/1742395317736372

26. Kautzky-Willer A, Harreiter J, Pacini G. Sex and Gender Differences in Risk, Pathophysiology and Complications of Type 2 Diabetes Mellitus. *Endocr Rev*. 2016;37(3):278-316. doi:10.1210/er.2015-1137

27. Leinung MC, Gianoukakis AG, Lee DW, Jeronis SL, Desemone J. Comparison of Diabetes Care Provided by an Endocrinology Clinic and A Primary-Care Clinic. *Endocr Pract*. 2000;6(5):361-366. doi:10.4158/EP.6.5.361

28. Oser TK, Hall TL, Dickinson LM, et al. Continuous Glucose Monitoring in Primary Care: Understanding and Supporting Clinicians' Use to Enhance Diabetes Care. *Ann Fam Med*. 2022;20(6):541-547. doi:10.1370/afm.2876

Table 1. *Sample characteristics and Chi-square and t-test results.*

Baseline Factors	Full Sample N=458	Logged in at least once n=315; 68.8%	Did not log in n=143; 31.2%	*p*-value	Multiple logins n=118; 37.5%	Single login n=197; 62.5%	*p*-value
Female gender	66.4%	69.8%	58.7%	0.020	66.9%	71.6%	0.387
Age (in years)	37.1 (9.74)	36.70 (9.65)	38.09 (9.91)	0.158	36.63 (9.60)	36.74 (9.71)	0.923
Race/ethnicity (non-Hispanic, white)	81.8%	81.0%	81.8%	0.826	79.7%	81.7%	0.651
Insurance (none/public)	22.3%	25.1%	16.1%	0.032	26.3%	24.4%	0.706
Income (>$100k)	19.6%	16.6%	26.1%	0.020	15.9%	16.9%	0.820
Type 1 diabetes	80.8%	81.0%	80.4%	0.893	20.3%	18.3%	0.651
HbA1c (n=262)	7.77 (1.76)	7.79 (1.82)	7.72 (1.59)	0.786	7.99 (1.97)	7.64 (1.70)	0.182
Diabetes distress	2.81 (1.05)	2.76 (1.04)	2.92 (1.07)	0.115	2.79 (1.07)	2.73 (1.03)	0.644
Medical setting (private practice/community health)	58.7%	62.5%	50.3%	0.014	68.6%	58.9%	0.083
Diabetes care in primary care	37.6%	36.5%	39.9%	0.492	44.9%	31.5%	0.016

Figure 1. *DiabetesWise home page.*

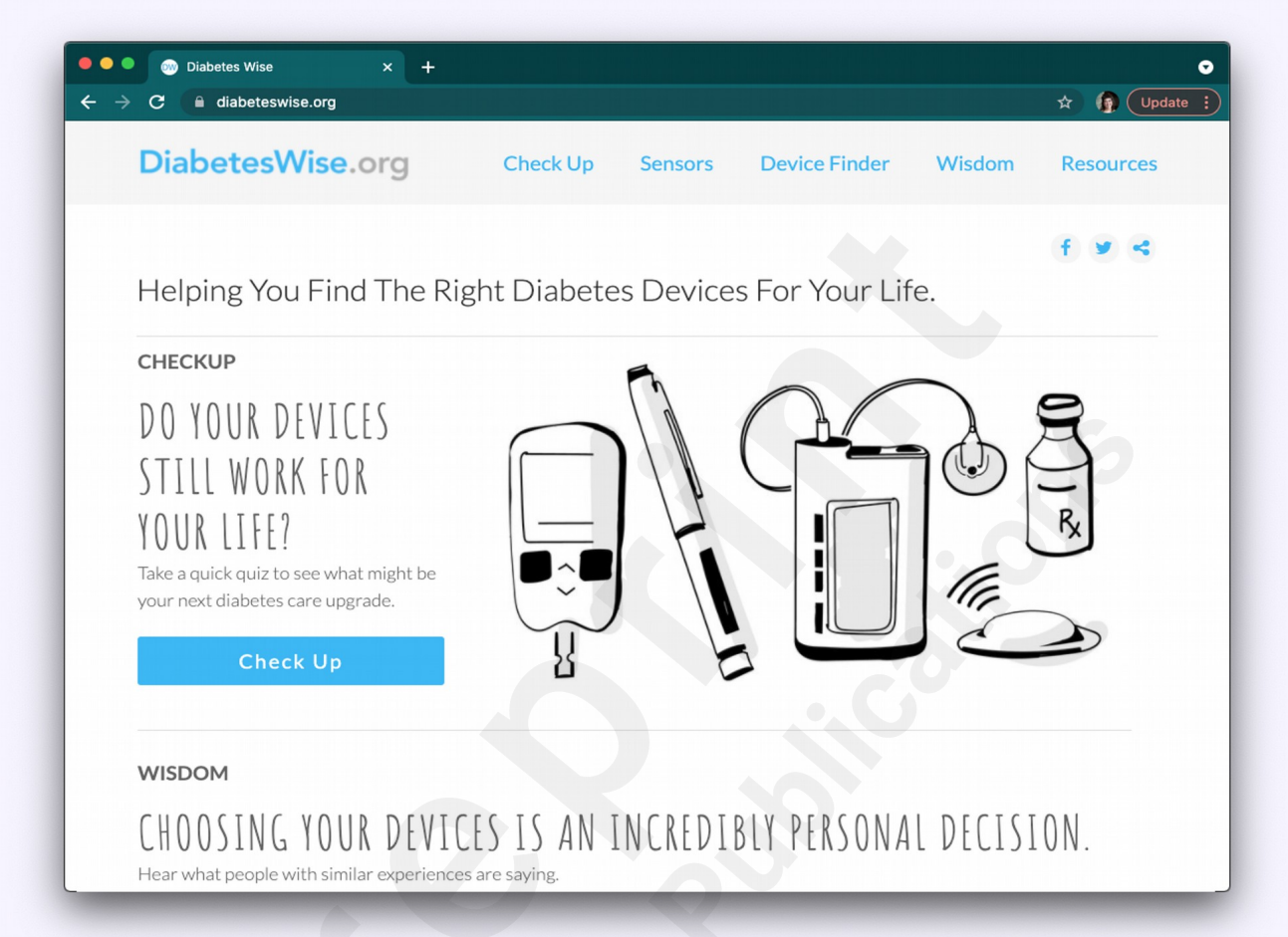
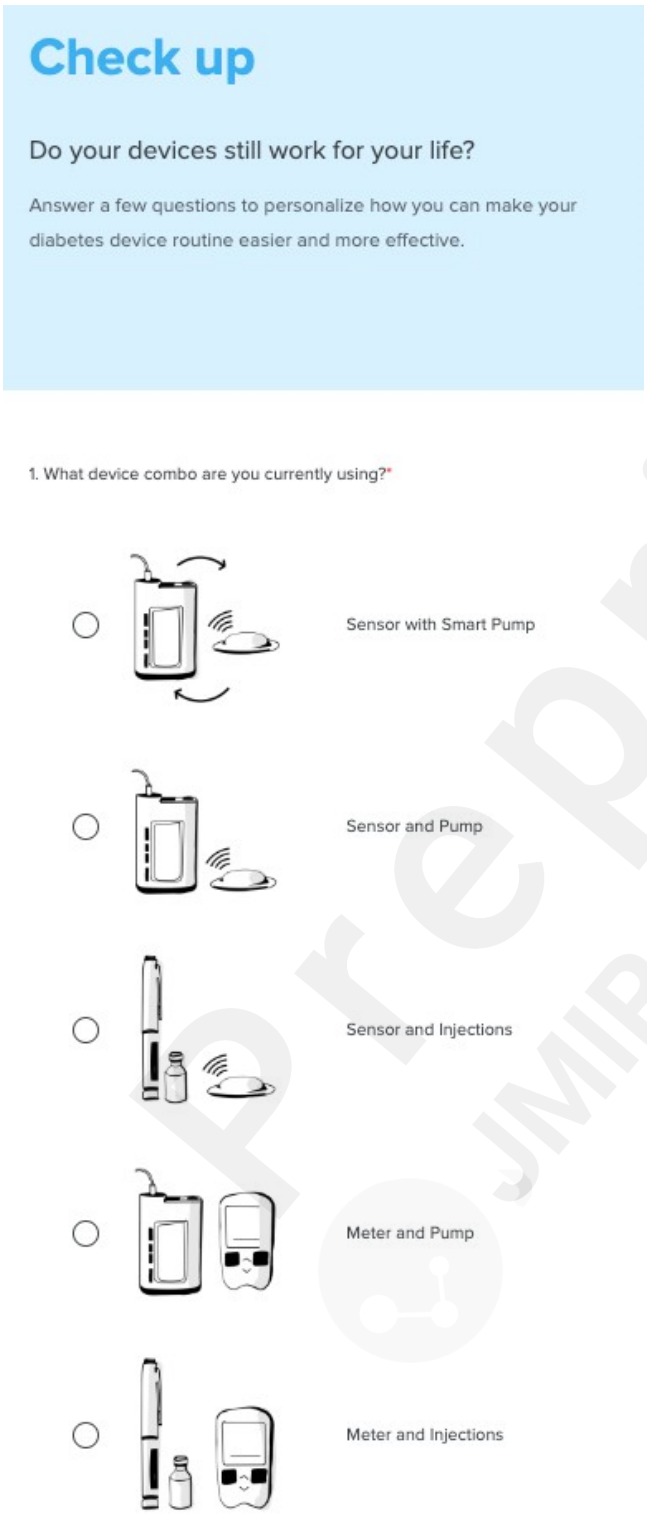


Figure 2. *DiabetesWise Check Up.*



Note. The DiabetesWise Check Up asks brief questions related to diabetes self-management, priorities, and preferences and then provide data-driven recommendations for device combinations and educational resources to learn more about those recommendations.