

BEHAVIORAL ENGAGEMENT AND ACTIVATION MODEL STUDY (BEAMS): A latent class analysis of Type 2 diabetes digital healthcare solution participants and non-participants

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INTRODUCTION

- Wider adoption of Digital Healthcare Solutions (DHCS) like mobile health apps may help improve health outcomes among people with Type 2 Diabetes.¹
- Research is needed to better understand DHCS adoption and reasons why users stop using DHCS prematurely.^{2,3}

OBJECTIVES

To describe the characteristics of adults who have ever used Digital Healthcare Solutions for T2D management and those who have not.

To identify and describe underlying subgroups within each cohort to inform DHCS adoption and engagement strategies.

METHODS

- Between December 2021 and March 2022 participants were recruited from the Evidation Health, Inc. platform.
- Eligibility included T2D diagnosis, ≥18 years of age, US residence, and internet access.
- Two cohorts of participants were constructed
 - Participants:** individuals who have ever used DHCS for T2D management
 - Non-participants:** individuals who have never used DHCS.
- Participants completed a one-time survey on demographics, psychosocial and clinical characteristics, and perceived barriers to using DHCS.
- Descriptive statistics and latent class analysis (LCA) were conducted to characterize subgroups within each cohort.

DISCUSSION

- While demographic, clinical, and personal characteristics that influence adoption and engagement of DHCS have been described previously, there is a need to understand how these factors are interrelated. The use of LCA allows researchers to understand whether and how these characteristics may co-occur together to form patterns that distinguish underlying subgroups.



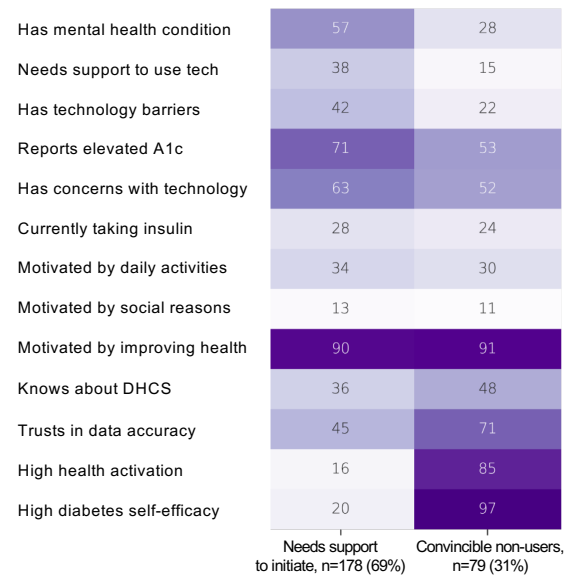
POSTER HIGHLIGHT: self-efficacy for diabetes self-management, health activation, perceived barriers to technology use, and concerns with DHCS are key characteristics to assess and address when promoting engagement and adoption of DHCS

RESULTS

Table 1: Demographic characteristics

	Overall N=633	Non-participant N=257	Participant N=376
Age, mean (SD)	51.89 (11.88)	56.19 (11.56)	48.95 (11.19)
Sex, n (%)			
Female	277 (43.8)	144 (56.0)	133 (35.4)
Male	355 (56.1)	112 (43.6)	243 (64.6)
Race/ethnicity, n (%)			
White	422 (63.6)	188 (69.1)	234 (59.7)
Black	90 (13.6)	33 (12.1)	57 (14.5)
Hispanic	85 (12.8)	29 (10.7)	56 (14.3)
American Indian	17 (2.6)	11 (4.0)	6 (1.5)
Asian	39 (5.9)	7 (2.6)	32 (8.2)
Highest level of education, n (%)			
Some high school	19 (3.0)	14 (5.4)	5 (1.3)
High school	65 (10.3)	42 (16.3)	23 (6.1)
Some college	108 (17.1)	57 (22.2)	51 (13.6)
Bachelors	189 (29.9)	49 (19.1)	140 (37.2)
Graduate	122 (19.2)	33 (12.8)	89 (23.7)

Figure 1: Non-participant Latent Class Analysis profile



Results from the latent class analysis suggest that selected psychosocial characteristics and attitudes towards digital healthcare solutions tend to co-occur together, thereby identifying subgroups of individuals similar to each other.

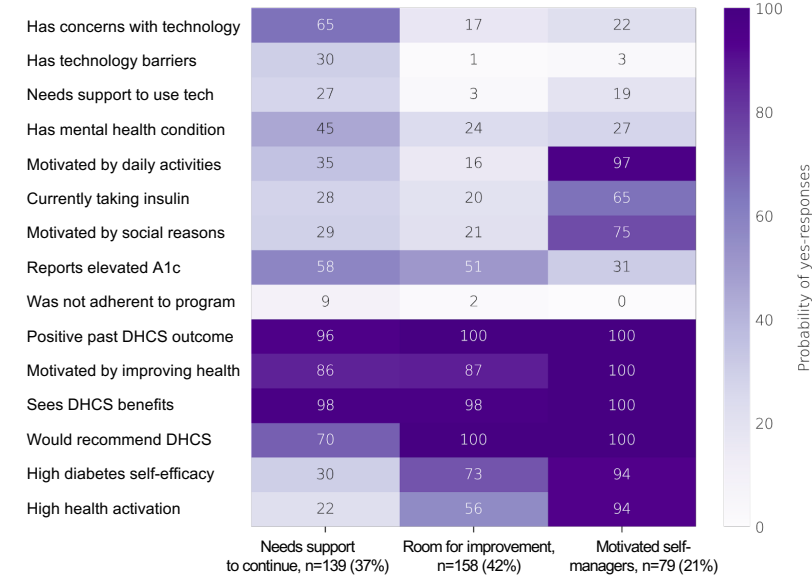
Non-Participant Subgroups

- 69% (178/257) **"Needs Support to Initiate"**: those with low self-efficacy and health activation and report barriers to accessing and navigating DHCS.
- 31% (79/257) **"Convincible Non-Users"**: individuals with high self-efficacy for diabetes and health activation, who do not have any particular reason for not using DHCS or believe they could achieve goals without them.

Participant Subgroups

- 37% (139/376) **"Needs Support to Continue"**: those with low levels of self-efficacy and health activation who report technology barriers and need for support
- 42% (158/376) **"Room for Improvement"**: individuals with moderate levels of self-efficacy and health activation who report multiple comorbidities
- 21% (79/376) **"Motivated Self-Managers"**: individuals with high self-efficacy for diabetes and health activation who report external and/or internal motivations for using DHCS

Figure 2: Participant Latent Class Analysis profile



DISCUSSION continued

- Self-efficacy for diabetes management, health activation, perceived barriers to technology use, and HbA1c emerged as key characteristics that may help identify different subgroups of Participants and Non-Participants.
- Identification of these subgroups is important because patterns of attitudes, beliefs, and concerns about using DHCS associated with each can help to inform user engagement and care personalisation strategies (vs. one size fits all) that improve adoption among non-participants and solidify user engagement over time for participants.
- With respect to study limitations, clinical characteristics such as BMI, HbA1c, and comorbidities are self-reported, which may be subject to recall bias among others. Furthermore, participants reported use of different types of DHCS for T2D, reflecting varied reference points for their perceptions.

CONCLUSION

Beyond demographic characteristics (e.g., age and sex) and clinical factors (e.g., uncontrolled HbA1c), psychosocial characteristics such as self-efficacy for diabetes management or perceived barriers to technology are important for identifying heterogeneous subgroups of people with T2D who would benefit from using DHCS and creating engaging and personalized care interventions matching their needs.

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DISCLOSURES

Kenichi CS Lee is an employee of Sanofi and may hold shares of Sanofi; Christian J Cerrada is an employee of Evidation Health, Inc; Raghu Kainkaryam is an employee of Evidation Health, Inc; Adee Kennedy is an employee of Sanofi and may hold shares of Sanofi; Jan Liska is an employee of Sanofi and may hold shares of Sanofi; Felix CM Lee is an employee of Sanofi and may hold shares of Sanofi

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