


An Evaluation of a Diabetes Self-Management Education (DSME) Intervention Delivered Using Avatar-Based Technology

Certified Diabetes Educators' Ratings and Perceptions

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Purpose

The purpose of this study was to evaluate the perceptions that certified diabetes educators (CDEs), of diverse health professions, have of a culturally appropriate e-health intervention that used avatar-based technology.

Methods

Cross-sectional, survey-based design using quantitative and qualitative paradigms. A logic model framed the study, which centered on the broad and general concepts leading to study outcomes. In total, 198 CDEs participated in the evaluation. Participants were mostly female and represented an age range of 26 to 76 years. The profession representative of the sample was registered nurses. Study setting and data collection occurred at https://www.surveymonkey.com/r/AvatarVideoSurvey-for-Certified_Diabetes_Educators. Study instruments used were the Basic Demographics Survey (BD-13), Educational Material Use and Rating of Quality Scale (EMU-ROQ-9), Marlowe-Crowne Social Desirability Survey (MS-SOC-DES-CDE-13), Quality of Avatar Video Rating Scale (QAVRS-7), Recommend Avatar to Patients Scale (RAVTPS-3), Recommend Avatar Video to Health Professionals Scale (RAVTHP-3), and Avatar Video Applications Scale (AVAPP-1). Statistical analysis used included *t* tests, Pearson product moment correlations, backward stepwise regression, and content/thematic analysis.

Results

Age, ethnicity, Arab/Middle Eastern, Asian, and white/European descents were significant predictors of a high-quality rating of the video. Thematic and content analysis of the data revealed an overall positive perception of the video.

Conclusions

An e-health intervention grounded in evidence-based health behavior theories has potential to increase access to diabetes self-management education as evidenced in the ratings and perceptions of the video by CDEs.

Introduction

The number of adults with type 2 diabetes mellitus (T2DM) in the United States nearly quadrupled from 5.5 million cases to 21.3 million cases according to the Centers for Disease Control and Prevention (CDC).¹ Minority racial/ethnic group and groups of low socioeconomic status have been particularly affected by the prevalence of T2DM.² Stratified by sex, stark increases in the prevalence of T2DM have been forecasted for the period encompassing 2005 to 2050. A 174% increase from 7.59 million cases to 20.18 million cases for males and an increase of 220% from 8.59 million cases to 27.47 million cases for females has been forecasted for the year 2050.²

Compounding the prevalence of T2DM is the shortage of certified diabetes educators (CDEs). According to statistics from the National Board for Certified Diabetes Educators, there were approximately 17,000 CDEs in the United States in 2016.³ Furthermore, prevention and management strategies, beyond what are currently being used to address the prevalence of T2DM, are needed to attenuate the increase in prediabetes and T2DM.

To address the shortage of CDEs and the diabetes epidemic, a formative evaluation was undertaken to assess the potential an e-health intervention has in reducing barriers to accessing diabetes self-management education (DSME). In addition, an assessment was undertaken to evaluate the perceptions that CDEs, of diverse health professions, have of a culturally appropriate e-health intervention using avatar-based technology with a focus on prevention and management of T2DM. Cultural competence as operationalized by the National

Standards for Culturally and Linguistically Appropriate Services in Health Care is

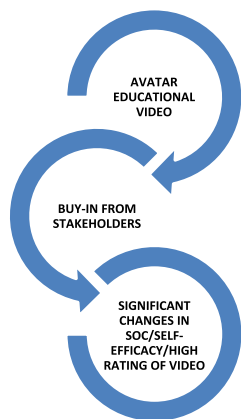
understanding the importance of social and cultural influences on patients' health beliefs and behaviors' considering how these factors interact at multiple levels of the health care delivery system (e.g., at the level of structural processes of care or clinical decision making); and finally, devising interventions that take these issues into account to assure quality health care delivery to diverse populations.⁴

Theoretical Frameworks

Several theoretical frameworks and health behavioral theories were the bedrock of this evaluation—a program theory logic model; the social cognitive theory, specifically the construct of self-efficacy; the empowerment approach; the constructs of the transtheoretical model; brief action planning; the American Association of Diabetes Educators seven self-care behaviors associated with successfully managing T2DM, known as the AADE7 Self-Care Behaviors; and brief motivational interviewing. There is a need to use a variety of health behavior theories, as the effective delivery of health interventions hinges upon the integration of the most applicable theory and practice strategies for a variety of situations.⁵ Different theories are best suited to different units of practice, such as individuals, groups, and organizations. Hence, it is critical that CDEs use diverse theoretical frameworks, as the frameworks contextualize care plans, which in turn provide guidelines for teaching, clinical practice, and research.^{6,7}

The National Standards for Diabetes Self-Management Education and Support, specifically Standard 2, emphasized the importance of having a “planned, documented strategy to engage and elicit input from stakeholders.” Having a planned and documented strategy in place “will shape how DSMES [diabetes self-management education and support] is developed, used, monitored and evaluated.”⁸

The process of delivery is illustrated in both the program theory logic model and the change theory logic model. The program theory logic model took into consideration the descriptive and prescriptive assumptions that are central to the e-health intervention. The descriptive assumptions pertain to the causal processes that create barriers to accessing diabetes self-management education.⁹ The descriptive assumptions are the prevalence of T2DM among minority racial and ethnic groups,² factors



DESCRIPTIVE ASSUMPTIONS

Prevalence and incidence of T2DM among "minority racial/ethnic groups and socioeconomically disadvantaged groups.

Factors within the built environment and low self-efficacy for behavior change

Lack of insurance coverage, requirement for physician referral for DSMT, personal perceptions about diabetes.

Confusion conflict between patient and providers

Behavioral impediments, cultural misunderstanding, poor diffusion of knowledge, underutilization of information technology, inefficient organization of care, financial disincentives...and ineffective public policies.

PRESCRIPTIVE ASSUMPTIONS

Avatar-based technology Go Animate

The AADE7™ framework.

The construct of selfEfficacy of the social cognitive theory

Stage of change constructs.

Brief Motivational Interviewing

Brief Action Planning

Figure 1. Theory of change logic model.

within the built environment such as transportation use,¹⁰ poor sense of autonomy and control over one’s environment and low self-efficacy for behavior change, lack of insurance coverage, requirement for physician coverage for diabetes self-management training (DSMT), personal perceptions about diabetes, avoidance behaviors, lack of awareness that DSME exists,¹¹ confusion and conflict between patient and providers,¹² behavioral impediments, cultural misunderstanding, poor diffusion of knowledge, underutilization of information technology, inefficient organization of care, financial disincentives, and ineffective public policies.¹³ Prescriptive assumptions, defined as the components required to bring about the desired outcome⁹ (a high rating of the video and changes in stage of change and self-efficacy), are utilization of the avatar-based technology Go Animate; the AADE7 Self-Care Behaviors framework; stage of change constructs; the social cognitive theory, specifically the

construct of self-efficacy; brief motivational interviewing; and brief action planning (Figure 1).

By embedding the aforementioned frameworks within the e-health intervention, it was assumed that diffusion of the innovation of DSME through the vehicle of an avatar educational video via stakeholders in DSME ultimately results in the desired outcome—the stakeholders’ rating of the quality of the avatar educational video as high or very good. It should be mentioned that the AADE7 Self-Care Behaviors serves as a framework that has been used as the organizing structure for data collection and other activities pertaining to diabetes self-management education and support. The AADE7 Self-Care Behaviors are healthy eating, being active, monitoring, taking medications, problem solving, reducing risks, and healthy coping.¹⁴

The scripts in the intervention are based upon the training curriculum used at the Center for Excellence in Primary Care developed by Tom Bodenheimer, MD, MPH, in the Department of Family Community Medicine at the University of California San Francisco of Medicine.¹⁵

The research questions pertaining to the CDE sample group investigated the following 3 questions: To what extent did the CDE rating of the quality of the educational materials (Quality of Avatar Video Rating Scale [QAVRS-7]) vary according to selected sample characteristics? What were the best predictors of the outcome of a high rating of the quality of the avatar video? What were the qualitative themes associated with the health care professionals’ use of the avatar educational video? After watching the video covering the 7 diabetes self-management behaviors, it was hypothesized that the CDEs would rate the quality of the video as high.

Methods

As this evaluation is descriptive, a cross-sectional survey-based design that used both quantitative and qualitative paradigms was used to evaluate CDE perceptions of an avatar-based e-health intervention grounded in evidence-based health behavior theories. The advantages of using a cross-sectional survey-based design are its suitability for studies that require a description of variables as well as descriptions of the distribution patterns of the variables. Moreover, studies that use cross-sectional designs are suitable for examining associations between variables. When examining the association between variables, the predictive value is predicated upon the study hypotheses and is dependent upon the choice of which variables are labeled as the independent or dependent variables.

The evaluation study investigated CDE perceptions of the potential an e-health intervention might have in diverse settings, in addition to what variables were predictive of the CDE rating the quality of the e-health intervention as high or very high. A convenience sampling method was used to recruit the participants from a population of CDEs, representative of diverse health professions. The sampling frame from which the participants were recruited was obtained from a public list of CDEs on the website of the American Association of Diabetes Educators. Additional methods to recruit participants used social networking platforms such LinkedIn, Facebook, and Twitter. Prospective participants were invited to participate in an online-survey hosted on the Survey Monkey website. The duration of the recruitment period was 2 months. Inclusion criteria for the study required that the participants be aged 18 or older, have the ability to understand and read the English language, be in possession of the CDE credential, and having completed the survey as well as reporting that they watched both avatar videos in their entirety.¹⁶

Prior to collection of the data, the study received approval from the Teachers College, Columbia University Institutional Review Board as protocol 16-070.

Participants

A total of 276 respondents, all of whom were health care professionals in possession of the CDE credential, replied to the DSME survey, but not all provided valid response data. A total of 78 respondents were excluded from the survey, because for unknown reasons they did not complete (a) the 9 items in the Educational Material Use Scale–Rating of Quality (EMU-ROQ-9) and/or (b) the 7 items in the QAVRS-7.

Most of the respondents ($n = 193$, 97.5%) were female. Most of the responses indicated that the participants were married or in a domestic partnership ($n = 152$, 76.8%). They ranged in age from 26 to over 70 years. The most frequent age groups ($n = 42$, 21.2%) were 41 to 45, 46 to 50, and 51 to 55 years. The prevailing ethnicity ($n = 168$, 84.8%) was white/European. The remainder were members of minority ethnic groups (Asian, black/African American, Hispanic/Latino, Native American, Pacific Islander, and Arab). The annual household income of the respondents ranged widely from \$20,000 to over \$500,000. Over half of the respondents earned \$100,000 to \$199,999 ($n = 103$, 52.0%). The education level ranged broadly from grade school to master's degree. The most frequent educational attainment was bachelor's degree ($n = 88.0$, 44.4%) (Table 1).

Table 1

Demographic Characteristics of Health Care Professionals

Characteristic	No. (%)
Sex	
Female	193 (97.5)
Male	5 (2.5)
Age, y	
26-30	6 (3.0)
31-36	13 (6.6)
37-40	11 (5.6)
41-45	15 (7.6)
46-50	20 (10.1)
51-55	42 (21.2)
56-60	42 (21.2)
61-65	42 (21.2)
66-70	4 (2.0)
71-75	3 (1.5)
Marital status	
Married (or in domestic partnership)	152 (76.8)
Single, divorced, widowed	46 (23.2)
Ethnicity	
White/European	168 (84.8)
Asian	10 (5.1)
Black/African American	9 (4.5)
Hispanic/Latino	8 (4.0)
Other (Native American, Pacific Islander, Arab)	3 (1.5)
Annual household income	
\$20,000 to \$39,000	4 (2.0)
\$40,000 to \$49,000	6 (3.0)
\$50,000 to \$99,999	65 (32.8)
\$100,000 to \$199,999	103 (52.0)
\$200,000 to \$299,000	12 (6.1)
\$300,000 to \$399,000	5 (2.5)
\$400,000 to \$499,000	1 (0.5)
\$500,000 to \$799,000	2 (1.0)
Highest education	
Grade school	6.0 (3.0)
High school	5.0 (2.6)
Associate's degree	84.0 (42.4)
Bachelor's degree	88.0 (44.4)
Master's degree	15.0 (7.6)

Table 2
Contextual Characteristics of Health Care Professionals

Characteristic	No. (%)
Professional position	
Nurse practitioner	18 (9.4)
Registered nurse	96 (48.6)
Dietitian or dietitian nutritionist	67 (33.8)
Pharmacist	8 (4.0)
Physician assistant	1 (0.5)
Clinical exercise professional	2 (1.0)
Master certified health educator	1 (0.5)
Not specified	5 (2.6)
Years practicing as a certified diabetes educator	
1-5	53 (26.8)
6-10	41 (20.7)
11-15	33 (16.7)
16-20	33 (16.7)
21-25	14 (7.1)
>25	24 (12.1)
Number of patients/clients diagnosed with T2DM	
1-10	1 (0.5)
21-30	3 (1.5)
41-50	4 (2.0)
51-60	2 (1.0)
61-70	1 (0.5)
71-80	1 (0.5)
81-90	3 (1.5)
91-100	8 (4.0)
>100	175 (88.4)
Diagnosed with T2DM	
No	187 (94.4)
Yes	11 (5.6)
Live with someone diagnosed with T2DM	
No	163 (82.3)
Yes	33 (16.7)
Family members diagnosed with T2DM	
No	124 (62.6)
Yes	74 (37.4)

Abbreviation: T2DM, type 2 diabetes mellitus.

The health care professions represented in the sample (N = 198) were nurses (nurse practitioner or registered nurse), which represented nearly 60% of the sample (n = 114, 57.6%). The next most frequent professional position was dietitian or dietitian nutritionist (n = 67, 33.8%). The remainder reported their positions as pharmacist, physician assistant, clinical exercise professional, or master certified health education specialist or they did not indicate their position (Table 2).

Their years of experience varied broadly from practicing as a CDE for less than 5 years to over 25 years. Roughly 50% of the respondents (n = 94, 47.5%) had been practicing as a CDE for 1 to 10 years. The number of patients/clients diagnosed with T2DM that each respondent served ranged from fewer than 10 to over 100. The majority (n = 175, 88.4%) reported that they had over 100 clients. A small proportion of the respondents (n = 11, 5.6%) had been diagnosed with T2DM. Greater proportions of the sample lived with someone diagnosed with T2DM (n = 33, 16.7%) and/or had family members diagnosed with T2DM (n = 74, 37.4%).

Data Collection

Data collection occurred at https://www.surveymonkey.com/r/Avatar/VideoSurvey-for-Certified_Diabetes_Educators. Quantitative data were transferred from Survey Monkey to SPSS and analyzed using SPSS 23.

Analysis

Statistical tests used to analyze the quantitative data included *t* tests, Pearson product moment correlations, and backward stepwise regression. Qualitative data were transferred from Survey Monkey to NVivo 11 for Mac. Content and thematic analyses were used to analyze the qualitative data.

The DSME E-Health Intervention

As highlighted previously, the avatar educational video was founded upon several theoretical frameworks and health behavioral theories, inclusive of a program theory logic model; a change theory logic model; the social cognitive theory, specifically the construct of self-efficacy; the empowerment approach; the stages of change constructs; brief action planning; the AADE7

Table 3
Educational Materials Used by Certified Diabetes Educators

Item	No. (%)
Handouts	154 (77.8)
Websites	19 (9.6)
Conversation maps	10 (5.1)
Videos	9 (4.5)
Apps	4 (2.0)
Three-dimensional models	2 (1.0)

Self-Care Behaviors; and brief motivational interviewing. Participation in the study required a 45-minute investment on the part of the participants. For the initial 20 minutes, the participants were required to respond to survey questions. Upon completing the survey questions, the participants were required to watch the avatar educational videos, which covered the AADE7 Self-Care Behaviors for approximately 15 minutes. For the final 10 minutes of the survey, the participants were required to respond to a final set of survey questions that included rating the video.

Outcome Measures

The 9-item scale, EMU-ROQ-9, measured what types of diabetes-related educational materials the CDEs use with their clients diagnosed with T2DM. A subscale of the EMU-ROQ-9 assessed the CDE quality rating of the educational material. Survey questions included in the scale were the following:

1. Do you use any educational materials with your patients/clients with type 2 diabetes mellitus (T2DM)? The respondents were given the option of responding “yes” or “no” to the survey question.
2. What educational materials do you use with your patients/clients with T2DM? The educational materials listed as options were as follows: diabetes-related handouts, fotonovelas, audiotapes, conversation maps, videos, apps, 3-dimensional models, websites, or other diabetes-related materials.

All the respondents reported that they used educational materials with their patients/clients who were

diagnosed with T2DM. The materials they used are summarized in Table 3. Handouts were the most frequently used materials ($n = 154$, 78%), with less frequent use of websites, Conversation Maps, videos, apps, and 3-dimensional models.

The EMU-ROQ-9 subscale measured the respondents' ratings of the quality of different types of educational materials using a 6-point ordinal scale, where 0 = does not use, 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good. The survey question permitted the respondents only 1 response to this question. The frequency distribution of the scores is presented in Table 4, sorted into order of magnitude of the highest (good and very good) ratings.

The highest quality educational materials, indicated by the highest frequencies of good and very good ratings (endorsed by over half of the respondents), were handouts ($n = 163$, 82.3%), websites ($n = 149$, 75.3%), apps ($n = 128$, 64.6%), materials personally used ($n = 114$, 57.6%), videos ($n = 112$, 56.6%), and 3-dimensional models ($n = 108$, 54.5%). The lowest quality educational materials, indicated by the smallest frequencies of good and very good ratings (endorsed by less than half of the respondents), were Conversation Maps ($n = 96$, 48.5%), audiotapes ($n = 31$, 15.7%), and fotonovelas ($n = 24$, 12.1%).

The 7 items in the QAVRS-7 measured the respondents' quality rating of the 7 components of the e-health intervention, the AADE7 Self-Care Behaviors, using a 6-point ordinal scale, where 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good, sorted into order of magnitude of the highest (good, very good, and excellent) ratings.

The highest quality components, indicated by the highest frequencies of good, very good, and excellent ratings (endorsed by 60% of the respondents), were being active ($n = 163$, 82.3%), taking medication ($n = 126$, 63.6%), healthy coping ($n = 126$, 63.6%), reducing risks ($n = 122$, 61.6%), and problem solving ($n = 121$, 61.1%). The lowest quality components, indicated by the smallest frequencies of good, very good, and excellent ratings (endorsed by less than 60% of the respondents), were monitoring ($n = 110$, 55.6%) and healthy eating ($n = 97$, 48.9%) (Table 5).

The QAVRS-7 ranged from a minimum of 7 (implying that the respondent believed that all components of the video were very poor) to a maximum of 42 (implying that the respondent believed that all components of the video were excellent).

Table 4

Frequencies of Item Scores for the Educational Material Use Scale–Rating of Quality

Item	0 (Do Not Use)	1 (Very Poor)	2 (Poor)	3 (Fair)	4 (Good)	5 (Very Good)
Handouts	0	0	2	33	81	82
Websites	23	0	1	25	97	52
Apps	46	0	5	19	92	36
Materials personally used	64	0	3	17	77	37
Videos	56	0	1	29	64	48
Three-dimensional models	72	0	1	17	53	55
Conversation maps	64	1	4	33	57	39
Audiotapes	129	2	11	25	20	11
Fotonovelas	153	0	3	18	18	6

Table 5

Frequencies of Item Scores for the Quality of Avatar Video Rating Scale by Certified Diabetes Educators

Item	1 (Very Poor)	2 (Poor)	3 (Fair)	4 (Good)	5 (Very Good)	6 (Excellent)
Being active	1	14	56	79	42	6
Taking medication	0	14	58	79	40	7
Healthy coping	0	10	62	76	45	5
Reducing risks	0	13	63	77	38	7
Problem solving	0	14	63	74	41	6
Monitoring	1	16	71	68	37	5
Healthy eating	3	17	81	74	20	3

Results

The research questions pertaining to the CDE sample group investigated the following 3 questions: To what extent did the CDE rating of the quality of the educational materials (QAVRS-7) vary according to selected sample characteristics? What were the best predictors of the outcome of a high rating of the quality of the avatar video? What were the qualitative themes associated with the health care professionals' use of the avatar educational video? After watching the video covering the 7 diabetes self-management behaviors, it was hypothesized that the CDEs would rate the quality of the video as high.

The data revealed a weak but significant positive correlation between the respondents' rating of the quality of the avatar educational video (QAVRS-7) and age (r (N, 198) = .142, P = .046), as well as a weak but significant positive correlation between the QAVRS-7 and the EMU-ROQ-9 (Pearson's r (N, 198) = .190, P = .007). The EMU-ROQ-9 measured the type and quality of different types of educational materials, and the QAVRS-7 measured the respondents' quality rating of the 7 components, also referred to as the AADE7 Self-Care Behaviors, of the e-health intervention. The findings implied that there was a tendency for older respondents to report high-quality ratings of the video compared with younger

respondents. Furthermore, the weak positive correlation between the QAVRS-7 and the EMU-ROQ-9 implied that respondents who reported high-quality ratings of different types of educational materials also reported higher quality ratings for the video.

Backward stepwise regression analysis was used to determine the best predictors of a high rating of the video. Preliminary analyses were conducted to ensure there were no violations of the assumption of normality, linearity, multicollinearity, and homoscedasticity. The independent variables of age ($P = .035$), ethnicity ($P = .007$), and being of Arab/Middle Eastern descent ($P = .002$), Asian descent ($P = .002$), and white/European descent ($P = .020$) were revealed to have made unique contributions to the prediction of a high rating of the quality of the video.

Content and thematic analysis was examined of the narrative responses to the following open-ended questions: (a) why or why not would you recommend the video, and (b) what were the strengths and weaknesses of the video? The responses were categorized into 8 themes. Each theme was coded as (a) positive, implying that the respondents emphasized the strengths of the video and provided positive reasons to recommend the video, and (b) negative, implying that the weaknesses of the video were highlighted, with negative reasons not to recommend the video.

The proportion of the quotations with positive themes ($n = 42$, 34.7%) was less than the proportion of quotations with negative themes ($n = 79$, 64.9%). The health care professionals' overall impression of the video, in general, appeared to be more negative than positive.

The positive themes revealed that CDE perceptions of the content of the video provided good information ($n = 23$, 19.0%) that was easy to understand ($n = 14$, 22.6%), as well as a good starting point ($n = 6$, 5.0%). The most frequent negative theme was that the sound quality of the video was poor ($n = 35$, 29.0%). Approximately 13% ($n = 17$, 13.2%) of the respondents disliked the avatar video while others thought that the video was too simple ($n = 16$, 13.2%) or contained only basic information ($n = 8$, 6.6%). A small proportion of the health care professionals suggested that the video contained too much information ($n = 3$, 2.5%).

Regarding whether or not the CDEs would recommend the avatar educational video to their patients/clients and health care providers in possession or not in possession of the CDE credential, the qualitative data revealed that they would recommend the video.

Discussion

T2DM is a major public health problem and one of the most common chronic illnesses facing the nation. According to CDC estimates, in 2015, 30.3 million persons, or 9.4% of the US population, had diabetes. Approximately 24% (23.8%) or 7.2 million were not aware or did not report having diabetes. The groups most affected by T2DM are minority and racial/ethnic groups. Compounding this problem is the shortage of CDEs nationally and barriers to accessing DSME particular to the populations most affected by the disease. The prevalence and the shortage of CDEs highlighted the importance of developing an alternative approach to reducing barriers to accessing DSME in addition to reaching populations most affected by T2DM.

The purpose of this study was to evaluate the perceptions that CDEs, of diverse health professions, have of a culturally appropriate e-health intervention that used avatar-based technology. Focus was put on what variables were predictive of the CDEs rating the quality of the video as high and the CDEs' rationale on whether or not they would recommend the avatar educational video to others.

The investigation revealed that age, ethnicity, and Arab/Middle Eastern, Asian, and white/European descent were significant predictors of a high rating of the quality of the avatar educational video. The CDEs' overall impression from a qualitative perspective was negative as a consequence of the sound quality of the video, the fact that it was a cartoon, and that the content was too simple. The data also revealed that the CDEs would recommend the avatar educational video to their patients/clients and health care providers whether or not they were CDEs.

Study Limitations


Although this study is grounded in theory, its design was a cross-sectional and survey-based design. As such, cause-and-effect relationships cannot be inferred in a cross-sectional, survey-based design compared to an experimental design. Furthermore, while the e-health intervention is founded upon a logic model that represents a causal pathway about how the video is expected to work, one cannot infer that the rating of the quality of the video as good to very good was caused by the video.

Implications

Although the American Association of Diabetes Educators has developed a framework that reflects patient-centered self-management and provides a common language for communication¹⁴ among CDEs, the findings from the qualitative data imply that there is a lack of understanding of the importance of having a common language or program theory that is patient centered within the profession of DSME. The findings also reveal that more emphasis should be placed upon the significance of the standardized “action-oriented terms”¹⁴ of the AADE7 Self-Care Behaviors as they are uniquely associated with achieving the behavioral outcomes associated with successfully managing T2DM. Negative themes associated with the CDE narrative, such as the information was “too simple” and/or the “too basic,” implied that the strength, utility, and importance of the AADE7 Self-Care Behaviors framework was lost in its simplicity on the part of CDEs. Perceptions such as the video being “too simple” and “too basic” in terms of its educational content were indicative of this. Emphasis on the perceived flaws and subjective opinions, such as “I don’t like cartoons” and “the characters don’t look like my patients” within the avatar educational video, rather than attention and recognition of the utilization of evidence-based approaches, theories, and interventions that provided a framework for the video and are an integral part of DSME, revealed a lack of understanding of the theoretical foundations as it relates to the delivery of DSME.¹⁶

The American Association of Diabetes Educators’ rationale for the adoption of the AADE7 Self-Care Behaviors as a framework as stated allows for “benchmarking, setting of professional standards . . . universal measurement of the effects of diabetes education and DSME” and “provides consistent measures for conducting research to provide evidence for policymakers advocating for health care policy.”¹⁴

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