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Evaluating the Use of a Diet Screening Tool for Diabetes and Weight Management in Primary Care

Christie McBride
christie.otto@gmail.com

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Christie M. McBride

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Abstract

Background: Type 2 diabetes mellitus is a prominent disease and leading cause of death in the nation. Many complications can develop when glucose levels are poorly controlled. When patients receive education and support in diabetes self-management, including individualized dietary interventions, it leads to improved glycemic control.

Purpose: The purpose of this quality improvement (QI) project was to evaluate the incorporation of a diet recall tool, Starting the Conversation (STC), in the standard care for diabetic patients with abnormal body mass index (BMI). The study aimed to examine: (1) patient opinion of the intervention and (2) healthcare provider satisfaction with use of the diet recall tool.

Methods: This QI project took place in a Women's Health primary care clinic within an academic medical center. The study utilized the Plan, Do, Study, Act (PDSA) rapid-cycle model for improvement. Stakeholder feedback was anonymously obtained by survey collection.

Results: Most patients reported finding the STC tool helpful for describing diet ($M = 4.00$, $SD = 0.9$, $n = 28$) and reflecting on typical eating habits ($M = 3.86$, $SD = 1.14$, $n = 28$). When a nutrition education and goal setting element was added, interest in utilizing these tools was evenly split ($M = 3.25$, $SD = 1.28$, $n = 8$). Primary care providers (PCPs) reported inadequate time for nutrition counseling, but all found it helpful to have the STC tool and nutrition education material available ($n = 3$).

Conclusion: The STC tool can aid in quickly collecting nutrition information and may help motivated patients improve their dietary habits. The STC can be a useful tool for PCPs to utilize when counseling patients who are ready to make dietary changes.

Keywords: type 2 diabetes, diet, body mass index

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Introduction

Diabetes is a prevalent disease in the United States (U.S.) and when poorly controlled it can lead to many complications and high healthcare costs. Approximately 11% of adults in the U.S. have diabetes, which equates to 37.3 million people (Centers for Disease Control and Prevention [CDC], 2020). Diabetes has an estimated annual cost of $327 billion and it is the 7th leading cause of death in the U.S. (CDC, 2020). There is a clear need for improvement in the care and management of diabetic patients. Eighty-nine percent of diabetic patients in the U.S. are also overweight or obese (CDC, 2020). Maintaining a healthy diet is a mainstay of treatment for diabetes. The American Diabetes Association (ADA) recommends individualized nutrition counseling as a means of helping patients manage weight and glycemic control and reduce risk of cardiovascular disease (Evert et al., 2019). Diabetes self-management education and support (DSMES) increases the use of primary care and other preventive services and correlates with less use of acute care services and lower medical costs (American Diabetes Association [ADA], 2021). Despite the evidence in support of nutritional therapy, such lifestyle modifications can be difficult for patients to achieve.

Background

Nutritional management of diabetic patients involves tracking both weight and glycemic control. Body mass index (BMI; kilograms of body weight divided by height in meters squared) is the most common measure used to classify weight in adults. Normal weight is considered a BMI of 18.5 to 24.99 kg/m^2, overweight is 25 to 29.99 kg/m^2, and obesity is a BMI of 30 kg/m^2 or above (Cornier et al., 2011). Monitoring glycemic control involves the use of a hemoglobin A1c (A1c) level, which is a measurement of the average blood glucose from the past three months. An A1c less than 7% (without significant hypoglycemia) is considered an appropriate

goal for most non-pregnant diabetic adults and a goal less than 8% may be used for patients with shorter life expectancy or concerns about harm from further treatment (ADA, 2021). Of adults diagnosed with diabetes, 18.7% have an A1c value greater than 9.0%. The United States Department of Health and Human Services (USDHHS) has set a 10-year goal to reduce this number to 11.6% by 2030 (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). Patients with A1c levels this high are typically referred to diabetes education programs, but often do not attend for logistical, financial, and medical reasons, or because they perceive no benefit (Horigan et al., 2017). Primary care providers (PCPs) should therefore explore more interventions to help their patients manage this condition.

The Medicare Access and CHIP Reauthorization Act (MACRA) was signed into law in 2015, changing Medicare payments to clinicians so that they favor value over volume. This Quality Payment Program (QPP) offers two tracks: (1) the Merit Based Incentive Payments System (MIPS) and (2) Alternative Payment Models (APMs). The MIPS scores eligible clinicians on performance in the areas of quality, cost, promoting interoperability, and improvement activities. These scores are weighted and used to calculate a final score that determines payment based on comparison to performance thresholds (Centers for Medicare and Medicaid Services [CMS], 2019). The quality requirement can be broken down into clinical quality measures (CQMs), which are specific, measurable goals on which clinicians can focus. Quality improvement (QI) practices should therefore center on these CQMs. There are two CQMs that can help quantify the success of diabetic nutrition management. The first is National Quality Forum (NQF) measure 0059, which is the percentage of patients 18-75 years of age with diabetes who had an A1c > 9% during the measurement period (National Quality Forum [NQF], n.d.). The second measure is NQF 0421, which measures the percentage of patients 18 years and

older who have an abnormal BMI as well as a follow-up plan documented at the current encounter or within the previous twelve months (NQF, n.d.). This study took place in an academic medical center in a Midwestern state of the U.S. At the time of this project, the primary care clinics of this institution were below threshold for both CQMs discussed, making these CQMs targets for QI endeavors.

Although referral to specialist care is appropriate for diabetes management, when critically evaluating the CQMs discussed, PCPs should consider other interventions within their control. At the time of this study, previous and ongoing QI projects explored the factors of social needs and medication management related to diabetes, so another route focusing on nutrition seemed appropriate. PCPs are ideally placed to deliver nutrition education since they have an established relationship with their diabetic patients and are routinely seen and therefore convenient for those who struggle to attend healthcare appointments (Grohmann et al., 2017). However, providing adequate nutrition teaching can be a challenge due to time constraints and a lack of specialized training on the topic (Phillips et al., 2012). Screening tools are often utilized in clinical settings to efficiently determine patient needs and track changes. Starting the Conversation (STC) is a validated eight-item food frequency screener that was designed for the primary care setting (Paxton et al., 2011). This project proposed that use of this tool by PCPs may help improve diabetic nutrition management.

Purpose

The purpose of this project was to trial the STC screening tool in a primary care setting to support diet education and goal setting for diabetic patients with a BMI in the overweight or obese range. It was expected that this QI project would allow the PCPs to efficiently assess dietary habits and deliver individualized nutrition teaching. If used routinely, the tool could be

utilized to track diet progress, since the STC summary score has been found to correlate with changes in caloric intake (Paxton et al., 2011). Given the relatively short time frame and small scale of this project, long-term effects such as A1c control and BMI changes were not tracked. Rather, the study aimed to examine facilitators and barriers to implementation as well as patient and provider experience in using the STC tool.

Conceptual Model

The theory of planned behavior (TPB) was used to guide this project (Ajzen, 1985). This theory describes six constructs which influence self-control behaviors: (1) attitudes, (2) behavioral intentions, (3) subjective norms, (4) social norms, (5) perceived power, and (6) perceived behavioral control. This theory is readily applied to health behaviors and can help healthcare providers contemplate a holistic plan of care. A person's positive or negative beliefs about an issue, their level of motivation, social and cultural influences, as well as support and feelings of self-efficacy all factor into health behavior decisions. The introduction of a diet recall tool in primary care visits can help evaluate patient self-awareness and progress into discussion about patient beliefs and perceptions.

The construct which most closely determines diet is intention. However, social and subjective norms also play a large role in the form of food culture. Individuals also have distinct ideas of how much nutrition plays a role in personal health, what foods are healthful, and how much ability one has to adapt dietary habits. These factors are part of the constructs of attitudes, perceived power, and perceived behavioral control. Differences in ideas about what constitutes a healthy diet can make it difficult to gather a general diet history from patients. A standard diet recall tool allows quick collection of specific types of foods as well as approximate servings. This information allows patients to reflect on their eating habits and for healthcare professionals

to provide more tailored education. The provider can also help the patient determine which behavioral constructs are affecting their choices and how to make changes.

Literature Review

The ADA (2021) acknowledges that achieving glycemic control through dietary measures remains a challenge and recommends individualized nutrition counseling for successful diabetes care. A literature review was conducted to identify specific gaps in primary care nutrition counseling and the most effective methods of intervention. The question guiding this review was: Within the primary care setting, what dietary interventions have been used to promote improvement in glycemic control among adults with type 2 diabetes (T2DM)? The databases searched were PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Cochrane. Titles and abstracts were searched for the terms "primary health care," "glycated hemoglobin" or "A1c," and "diet" or "nutrition." In CINAHL the major heading of "diabetes mellitus, type 2" was applied. Inclusion criteria were the following: published in the past five years, full text availability, English language, adult population, and peer-reviewed research articles. This search yielded 20 articles in PubMed, 20 in CINAHL, and 32 trials from the Cochrane database. After reviewing the results, a total of nine articles were deemed relevant and used for this synthesis.

Among the articles reviewed there were two qualitative studies and seven randomized controlled trials (RCTs). Locations included the United States, China, Denmark, Australia, Japan, Scotland, England, and the Netherlands. Interventions occurred in primary care settings. Two qualitative studies showed that diabetic patients desire more individualized diet teaching and encouragement from their PCPs (Arana et al., 2019; Ball et al., 2016). RCT studies showed that compared to usual care, interventions such as motivational interviewing (MI; Browning et

al., 2016), self-management instruction (Cheng et al., 2108), and patient-centered consultation (Hayashino et al., 2016; Varming et al., 2019) improved health behaviors but revealed no significant improvement in A1cs. Interventions that improved glycemic control included a weight management program that resulted in almost half (46%) of the intervention group achieving diabetes remission in one year compared to only 4% of the control group (Lean et al., 2017). Structured meal planning was also associated with lowered A1cs and cardiovascular risk factors when compared to instruction on the standard "Plate Method" (Mottalib et al., 2018). Finally, a study using several interventions had high dropout rates and therefore found no significant improvement in health behaviors or A1c (Vlaar et al., 2017).

The reviewed studies were of Level VI and Level II quality of evidence (Melnyk et al., 2011). Their findings generally confirm that individualized dietary interventions in primary care can lead to better diabetic management. Improved glycemic control was often not a significant finding, which may be due to the long-term process needed to adapt behavior and see physiologic change. Future longitudinal studies may add to our knowledge on this topic.

While referring patients to specialty clinics for diabetic management can add more complexity and new barriers to the plan of care, the time constraints of a family practice health maintenance visit also present a challenge (Phillips et al., 2012). The STC screening tool was specifically designed to efficiently evaluate eating habits during primary care visits. This simple intervention may enable the individualized teaching that is needed in primary care and lead to improved diabetes self-management and glycemic control.

Methods

Design

The process of implementing change in the work setting can be developed and evaluated using the Plan-Do-Study-Act (PDSA) model for improvement (Langley et al., 2009). In the Plan step of this model the observer collects data and develops an intervention. In the Do stage the intervention is tested out on a small scale with careful monitoring and documentation. During the Study phase the information gathered is analyzed and compared to predictions. In the Act stage the intervention is modified and refined using what was learned from the previous steps (Institute for Healthcare Improvement [IHI], 2021). This method was used to guide the introduction of the STC tool into diabetes management in primary care.

Setting

This QI project took place in the Women's Health primary care clinic of an academic medical center in a Midwestern state of the U.S. This clinic provides primary care services to adult women of all ages and aims to make preventive care more convenient by coordinating the scheduling of health maintenance procedures with wellness exams. This project corresponds with the goal of easing the process of preventive care because it seeks to optimize diabetes and obesity management within the primary care setting through brief screening and education. Each year the ambulatory services division of this healthcare system strives to meet CQM goals. This project was also designed to align with two ambulatory goals: (1) to reduce the percentage of patients 18 to 75 years of age with diabetes whose most recent A1c level was greater than 9.0% and (2) increase BMI screening and follow-up plans (NQF, n.d.). The proposed study aimed to address both of these MIPS goals by evaluating the effectiveness of incorporating a dietary questionnaire into primary care visits with diabetic patients with BMIs above normal range.

Women's Health was among the smaller clinic settings within the umbrella of primary care services. This clinic also performed well, reaching targets for many of the CQM goals. The small-scale atmosphere of Women's Health benefited this project by allowing for easy communication and quick feedback related to the intervention. The consistent schedule of experienced staff also facilitated this project because the workflow was stable enough to support changes in process. In this medical center the PCPs were assisted by medical assistants (MAs) who roomed patients, helped with procedures, and performed other nursing duties such as administering injections. Key stakeholders for this project included three PCPs, eligible patients of these PCPs, and two assisting MAs. Though this was a good atmosphere for initiating a small-scale project, there were some potential barriers. The ability for rapid data collection was limited by the small patient population. The time constraints of a typical visit could also have made it difficult for patients or providers to fully utilize the diet recall tool.

Sample

The study population was subject to inclusion criteria of 1) adult patients of the Women's Health clinic with 2) a diagnosis of T2DM and 3) a BMI above the normal range. Non-English speakers were excluded from the study. All clinic patients meeting these criteria who had a chronic care management or annual wellness appointment within the months of October 2021 through March of 2022 were eligible to be included in the study.

Procedure

Institutional Review Board (IRB) approval for this study was obtained as part of a larger project intended to train PCPs in QI practices. The procedures for this project were developed based on findings from the PDSA process. Measures and instruments used will be described below, followed by the data collection plan for each PDSA cycle.

Measures and Instruments

The STC tool was used to collect information about dietary patterns among diabetic patients with elevated BMI. This eight-item food frequency screener was developed from a 54-item validated instrument with the intention of creating a tool that can quickly be administered in the primary care setting and provide approachable, actionable information. The STC was tested over a two-year period in a randomized trial evaluating diabetes self-management intervention beyond usual care. The STC tool grades the frequency of particular dietary habits and produces a summary score that can range from 0 to 16. Higher scores correlate with a less healthful diet and the score can be trended over time with routine use of the tool. The validation study found that this summary score correlated with the National Cancer Institute's fat screener, another validated instrument. It was also found that the STC summary score at four months following baseline reflected reduced intake of calories from fat. The STC was additionally sensitive to the significantly improved diets of intervention patients in this trial compared to control (Paxton et al., 2011). The STC tool was chosen for this QI project due to its brevity, approachability for non-dieticians, and validity. The tool also asks for diet habits over the past few months, which conveniently corresponds with the timing of routine A1C checks for uncontrolled diabetes, which may occur up to every three months. The STC diet recall tool is available in Appendix A.

Patient feedback was collected in survey format. Patients received paper forms during rooming, which were collected without patient identifiers following the visit. Questions were primarily Likert scale with the additional option to comment on use of the STC tool. These questionnaires sought to understand patient interest in nutrition counseling and utility of the STC tool. The surveys were developed by the primary investigator (PI) in Microsoft Word and printed

at the clinic. The number of questions ranged from three to five. Progressive iterations of the patient survey are available in Appendix B.

Provider feedback was collected by anonymous electronic surveys, which were developed by the PI using Qualtrics software. Questions included Likert format, Yes/No response, and free text comment. An initial survey included up to nine questions, which inquired about attitude toward nutrition counseling for diabetic patients and experience with the STC tool. A second survey included up to five items and simply inquired about preference for having the tool and education available, as well as comment on barriers to providing nutrition counseling. These survey questions are available in Appendix C.

Data Collection Plan

PDSA Cycle One. During the month of October 2021, use of the STC tool was initiated for three providers of the Women's Health clinic. There were two MAs responsible for rooming the patients of these three providers. The PI met briefly with the two MAs to discuss how to distribute the STC to appropriate patients. The study population inclusion criteria were explained to the MAs, who expressed no concern for being able to identify appropriate patients. The STC was to be distributed during rooming without the use of patient identifiers on the document. The tool would remain available for use during the visit and would be collected by the MA at the end of the visit and stored in a private office of the clinic for later review by the PI. Discussions of the data collection plan took place between the PI and the MAs throughout the project in case of any barriers or concerns, but MAs were not formally surveyed on the process. No significant issues were reported by MAs concerning these procedures.

Before distribution of the tool began, the involved PCPs received an email informing them of the new intervention. They also received a copy of the STC and a document with brief

education about the validity and proper use of the tool. A copy of this education is provided in Appendix D. At the end of this cycle, a total of eleven patient surveys had been collected. After gathering feedback from the MAs about the distribution process, it was determined that data collection had been limited due to several PCP vacations during that month. During PDSA One, the PI also collaborated with the clinic dietician and an associated weight management clinic. The providers of these services also frequently used diet recall and approved of the STC tool being used in this trial. Benefits of referral to one of these services include ample visit time, availability for frequent follow-ups, and advanced professional knowledge of nutrition. It was determined that the QI project could not only encourage nutrition counseling in primary care, but also increase awareness of these specialized services. A patient survey question asking about interest in referral could allow motivated patients to have more detailed nutrition discussions, which would be covered by insurance due to diagnosis of diabetes.

PDSA Cycle Two. Due to the limited data collection in the first month of this intervention it was decided to continue distribution of the STC tool, with the addition of a patient survey question regarding interest in referral to the dietician. The MAs reported no difficulty with the established distribution method, so the same procedure was continued. The second round of intervention took place starting in November of 2021 and continuing into December of 2021. A total of nine patient surveys were collected during this cycle. At the end of this period of intervention, an electronic survey was sent out to the participating providers, using Qualtrics software. These surveys were optional and anonymous.

PDSA Cycle Three. Limited use of the STC tool was reported in provider survey responses from PDSA 2. In order to aid in utilization of the STC tool, an educational handout linking diet education to each recall item of the tool was developed by the PI and approved by

the clinic dietician. All participating clinic providers were notified of the addition of the education component and were provided a copy of the handout prior to distribution. A third cycle of intervention was initiated in late January of 2022 and continued to the end of February of 2022. In this cycle, patients were provided the STC tool, with additional guidance on estimating serving sizes, followed by the educational handout and a new patient survey inquiring about use of the tool and education. A copy of the serving size guidance and educational handout are provided in Appendix E. Patients could take the STC tool and education sheet home with them, while a survey was again collected without use of patient identifiers and stored in a private office of the clinic. To allow patients to take home the diet recall information while also maintaining simple study procedures, STC scores were no longer collected by the PI in this cycle. At the end of this intervention period, a second anonymous Qualtrics electronic survey was sent to the providers.

Results

Patient Data

The STC summary score can range from 0 to 16, with a higher score suggesting a less healthful diet. The STC questionnaires were distributed during each cycle of this study, but summary score results were only collected for analysis in PDSAs 1 and 2. The mean summary score from these two cycles combined was 7.6 (n = 20). All summary score results are available in Figure 1.

The patient surveys included up to five Likert items with response options of *strongly disagree, somewhat disagree, neutral, somewhat agree,* or *strongly agree*. Table 1 includes frequency and percentage of responses to all Likert items from the patient surveys and Table 2 includes mean (M) Likert scores with standard deviation (SD). The first three Likert items were

included in all PDSA cycles of intervention and a total of 28 responses were collected for each. The majority of patients agreed to Item (1) "I am interested in discussing diet and nutrition with my healthcare provider," with a mean score of 3.39 (SD = 1.04). Item (2) "I found the questionnaire above helpful for describing my typical diet" had the highest positive response rate, with a mean of 4.00 (SD = 0.9). Most patients also agreed to Item (3) "Filling out the questionnaire helped me realize my typical eating habits" (M = 3.86, SD 1.04).

A fourth Likert item, rating interest in referral to a dietician, was added to the patient survey in PDSA 2 and continued into PDSA 3. A total of 17 responses were collected, which were primarily negative (M =2.88, SD = 1.14). Three participants who had positive responses to dietary referral commented that they had already seen a dietician. Additional comments from positive responders included "I know what to do–doing it is the issue" and "I know what to eat but my struggle is to stay on eating plan."

The fifth Likert item was included in PDSA 3, which incorporated an education and diet goal setting component. The item states, "I anticipate using the Diet Goals sheet provided." A total of eight responses were collected which were equally split between negative and positive responses (M = 3.25, SD = 1.28).

Provider Data

Qualtrics survey links were e-mailed to the three participating providers and received a 100% response rate for both surveys (PDSAs 2 and 3). The initial provider survey from PDSA 2 included three Likert items regarding nutrition counseling for diabetic patients. All providers agreed that they felt diabetic patients benefit from nutrition counseling and that they try to discuss diet changes with patients with poor glycemic control. Two providers disagreed that there was adequate time for diabetes education while one provider was neutral. A fourth question

in this survey asked if the provider had used the STC tool during visits with their diabetic patients (*Yes/No*) and questions to follow were for those who had used the tool. Only one provider reported using the STC tool during visits and in the following questions, agreed that the tool was useful for diabetes management, that it helped patients improve diet, and that there was adequate time to use the tool during visits. This provider was neutral in whether the STC tool would continue to be used. A provider, who had not reported using the STC during visits, gave a response to survey Item (7), indicating that there was inadequate time to review the STC during visits. All survey questions and responses from PDSA 2 are available in Table 3.

The second provider survey from PDSA 3 asked about satisfaction with the STC diet recall tool and the nutrition education handout. All providers agreed that it was helpful to have both resources available. A final survey question inquired about barriers to providing nutrition counseling for diabetic patients. All providers listed time as a barrier and one provider additionally felt that patients were not always receptive to nutrition counseling. Questions and responses from the second provider survey are available in Table 4.

Discussion

This project used three PDSA cycles to implement and evaluate the use of the STC diet recall tool for diabetic patients with elevated BMI. Patients and providers participated in evaluating the tool through anonymous survey responses. The procedure of administering the STC tool during rooming was effective in this study setting, making specific diet information available to the provider at the start of the medical visit. Most patients expressed either interest or neutrality ($M = 3.39$, $SD = 1.04$, $n = 28$) in discussing diet and nutrition with their healthcare provider, however, there was little interest in referral to a dietician ($M = 2.88$, $SD = 1.14$, $n = 17$). These findings are consistent with the assumptions this QI project was founded on, that (1)

diabetic patients seek more dietary guidance from their PCPs and (2) patients are often disinterested in seeing another provider for nutrition management.

Returning to the TPB, the intent of this theory is to help us learn how changes in health behaviors occur. If we want to encourage behavior changes, the way to accomplish that is by making the contributing factors described in the theory more favorable. In this study, patients seemed to benefit from using the STC tool, with the majority reporting that they found the questionnaire helpful for describing their diet (M = 4.00, SD = 0.9, n = 28) and many acknowledging that it helped them realize their typical eating habits (M = 3.86, SD = 1.04, n = 28). Reviewing diet habits and comparing them to the recommendations for a healthy diet, with time, could help adjust a person's perception of what is normal and healthy to eat. Providing actionable tips for dietary change, either through nutrition counseling or an educational handout, may influence the patient's intention to change. This was somewhat effective in this study, with an equal number of patients expecting to use the diet goals form compared to those who expressed little interest (M = 3.25, SD = 1.28, n = 8).

Provider feedback was consistent. All providers agreed that diabetic patients benefit from individualized nutrition counseling and that it is something they try to provide when patients struggle to achieve glycemic control. They also agreed that adequate time for counseling is a significant barrier, which seemed to largely prevent discussion of the STC tool during visits. This finding of inadequate time for counseling during primary care visits is frequently reported in the literature (Wändell et al., 2018). All providers also reported that it is helpful to have the diet recall tool as well as nutrition education handout available as needed. The PCPs in this study were unlikely to routinely use diet recall due to time constraints but may choose to utilize the STC when counseling patients who are ready to make dietary changes.

Limitations

Limitations to this study include a small sample size and lack of diversity in the sample, which included only English-speaking women. Due to the short time frame of the study, there was no ability for a pre-test, post-test design, which would help evaluate the effectiveness of routine use of the STC tool. The study also took place in a clinic that emphasizes preventive care, so it is possible that women who choose to receive primary care in this setting are more proactive about their health than the general population, which may have affected their interest in the screening tool. Similarly, providers practicing in this setting may be more prone to value preventive care measures compared to other clinical settings. Participation of patients and providers was also optional, so those who chose to participate may have been more likely to have a positive opinion of the tool compared to those who declined participation.

Implications and Recommendations

Brief diet recall and nutrition counseling in primary care for diabetic patients should be further evaluated with a longer-term study. Tracking A1c and BMI for patients participating in long-term use of the diet recall tool would also be beneficial as it could help determine whether the intervention is motivating enough to translate into biometric improvements. Additionally, nutrition knowledge and readiness for change assessments could be used pre-and post-intervention with a longer study design, to show whether there are gradual learning and perception changes, with or without biometric improvement.

There are many factors that can play into poor diabetes management. When developing the plan of care, providers should consider nutrition, physical activity, medication adherence, and the socioeconomics at play with each of these factors. This study of a brief nutrition counseling tool was conducted to complement other primary care QI trials geared toward pharmaceutical

counseling and social needs assessment. Ideally, expansion on this project would assess all these contributing factors in order to identify common characteristics of those with poor glycemic control and identify a set of effective tools readily available for PCPs to utilize for optimizing diabetic care.

Conclusion

This QI project sought to find a brief and effective means of providing individualized nutrition counseling in primary care for diabetic patients. The validated STC diet recall tool was trialed in a primary care clinic. Use of the tool allowed patients to provide specific diet information for PCP review without using up appointment time. Many patients found this tool to be helpful and they were able to reflect on their dietary habits while filling out the questionnaire. Providers still struggled to find time to utilize the diet recall information for nutrition counseling during visits but reported that the tool was helpful to have on hand. Provision of a nutrition education and goal setting handout was of interest to around half of the patient participants and providers expressed interest in retaining these resources. Future research utilizing the STC tool in primary care should include tracking outcome measures such as A1C, BMI, nutrition knowledge, and readiness to change. Method of administration should also be tailored to the individual setting and available resources.

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Table 1

Patient Survey Responses

Patient survey item	n (%)
1. I am interested in discussing diet and nutrition with my healthcare provider.	
Strongly disagree	2 (7)
Somewhat disagree	4 (14)
Neutral	8 (29)
Somewhat agree	9 (32)
Strongly agree	5 (18)
2. I found the questionnaire above helpful for describing my typical diet.	
Strongly disagree	0 (0)
Somewhat disagree	2 (7)
Neutral	5 (18)
Somewhat agree	12 (43)
Strongly agree	9 (32)
3. Filling out the questionnaire helped me realize my typical eating habits.	
Strongly disagree	0 (0)
Somewhat disagree	3 (11)
Neutral	8 (29)
Somewhat agree	7 (25)
Strongly agree	10 (36)
4. I am interested in scheduling an appointment with a dietician or the weight management clinic.	
Strongly disagree	3 (18)
Somewhat disagree	4 (24)
Neutral	5 (29)
Somewhat agree	2 (12)
Strongly agree	3 (18)
5. I anticipate using the Diet Goals sheet provided.	
Strongly disagree	0 (0)
Somewhat disagree	3 (38)
Neutral	2 (25)
Somewhat agree	1 (13)
Strongly agree	2 (25)

Table 2

Patient Survey Mean Likert Scores with Standard Deviation

Likert Item	n	Mean	Standard Deviation
I am interested in discussing diet and nutrition with my healthcare provider.	28	3.39	1.04
I found the questionnaire above helpful for describing my typical diet.	28	4.00	0.9
Filling out the questionnaire helped me realize my typical eating habits.	28	3.86	1.04
I am interested in scheduling an appointment with a dietician or the weight management clinic.	17	2.88	1.14
I anticipate using the Diet Goals sheet provided.	8	3.25	1.28

Strongly disagree = 1, Somewhat disagree = 2, Neutral = 3, Somewhat agree = 4, Strongly agree = 5

Table 3

Provider Survey Responses: PDSA 2

Provider survey items	n (%)
1. Diabetic patients benefit from individualized diet teaching at routine clinic visits.	
Strongly disagree	0 (0)
Somewhat disagree	0 (0)
Neutral	0 (0)
Somewhat agree	0 (0)
Strongly agree	3 (100)
2. I discuss specific dietary changes with my diabetic patients when they have poor glycemic control.	
Strongly disagree	0 (0)
Somewhat disagree	0 (0)
Neutral	0 (0)
Somewhat agree	1 (33)
Strongly agree	2 (67)
3. I have adequate time to provide education to my diabetic patients when they struggle to control their blood sugar.	
Strongly disagree	0 (0)
Somewhat disagree	2 (67)
Neutral	1 (33)
Somewhat agree	0 (0)
Strongly agree	0 (0)
4. I have used the STC tool with my diabetic patients.	
Yes	1 (33)
No	2 (67)
5. The STC is a useful tool for diabetes management.	
Strongly disagree	0 (0)
Somewhat disagree	0 (0)
Neutral	0 (0)
Somewhat agree	1 (100)
Strongly agree	0 (0)
6. My patients find the STC helpful for improving diet.	
Strongly disagree	0 (0)
Somewhat disagree	0 (0)
Neutral	0 (0)
Somewhat agree	1 (100)
Strongly agree	0 (0)
7. I have adequate time to administer and review the	

STC during appropriate appointments. Strongly disagree Somewhat disagree Neutral Somewhat agree Strongly agree	 1 (50) 0 (0) 0 (0) 1 (50) 0 (0)
8. I will continue using the STC to guide dietary discussions with my patients. Strongly disagree Somewhat disagree Neutral Somewhat agree Strongly agree	 0 (0) 0 (0) 1 (100) 0 (0) 0 (0)
Comments	"This was a great tool. Wonderful conversation starter that led to a dietary referral, etc. with some of my patients."

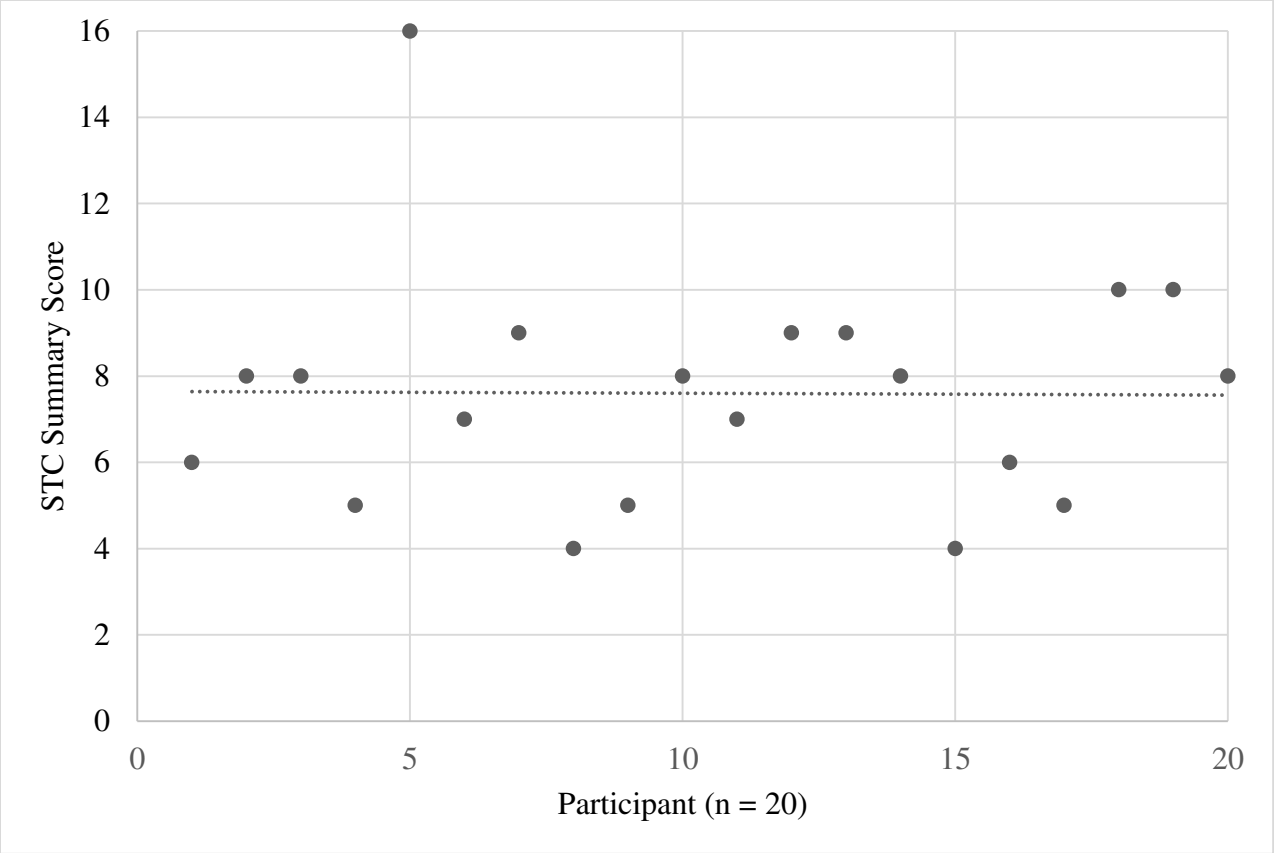
Table 4

Provider Survey Responses: PDSA 3

Provider survey items	n (%)
1. Do you think it is helpful to have a diet recall tool available for nutrition counseling? Yes No	 3 (100) 0 (0)
2. If “no” to previous, why?	No responses required
3. Do you like having a nutrition education sheet available for patients? Yes No	 3 (100) 0 (0)
4. If “no” to previous, why?	No responses required
5. What barriers do you face in providing nutrition counseling for diabetic patients?	Free text responses: 1. “Time; pt's perceptiveness” 2. “Time” 3. “Time - people always say, "Oh, you only have to spend 5 minutes having this discussion!" Realistically, the conversation is going to take 10-15 minutes and will take up the entire visit because I'll ask a question, get a 5-minute story in response, and then have to ask follow-up questions. The paper did help with that some since they already provided answers.”

Figure 1

Starting the Conversation (STC) Summary Scores



Appendix A

Starting the Conversation (STC) Diet Recall Tool

Starting The Conversation: Diet

(Scale developed by: the Center for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill, and North Carolina Prevention Partners)

Over the past few months:

1.	How many times a week did you eat fast food meals or snacks?	Less than 1 time ☐ 0	1–3 times ☐ 1	4 or more times ☐ 2
2.	How many servings of fruit did you eat each day?	5 or more ☐ 0	3–4 ☐ 1	2 or less ☐ 2
3.	How many servings of vegetables did you eat each day?	5 or more ☐ 0	3–4 ☐ 1	2 or less ☐ 2
4.	How many regular sodas or glasses of sweet tea did you drink each day?	Less than 1 ☐ 0	1–2 ☐ 1	3 or more ☐ 2
5.	How many times a week did you eat beans (like pinto or black beans), chicken, or fish?	3 or more times ☐ 0	1–2 times ☐ 1	Less than 1 time ☐ 2
6.	How many times a week did you eat regular snack chips or crackers (not low-fat)?	1 time or less ☐ 0	2–3 times ☐ 1	4 or more times ☐ 2
7.	How many times a week did you eat desserts and other sweets (not the low-fat kind)?	1 time or less ☐ 0	2–3 times ☐ 1	4 or more times ☐ 2
8.	How much margarine, butter, or meat fat do you use to season vegetables or put on potatoes, bread, or corn?	Very little ☐ 0	Some ☐ 1	A lot ☐ 2

SUMMARY SCORE (sum of all items): _____

Appendix B

Patient Surveys

PDSA 1

What do you think of this tool?

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I am interested in discussing diet and nutrition with my healthcare provider.	O	O	O	O	O
I found the questionnaire above helpful for describing my typical diet.	O	O	O	O	O
Filling out the questionnaire helped me realize my typical eating habits.	O	O	O	O	O

PDSA 2

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I am interested in discussing diet and nutrition with my healthcare provider.	○	○	○	○	○
I found the questionnaire above helpful for describing my typical diet.	○	○	○	○	○
Filling out the questionnaire helped me realize my typical eating habits.	○	○	○	○	○
I am interested in scheduling a visit with a dietician.	○	○	○	○	○

PDSA 3

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I am interested in discussing diet and nutrition with my healthcare provider.	○	○	○	○	○
I found the diet recall questionnaire helpful for describing my typical diet.	○	○	○	○	○
Filling out the questionnaire helped me realize my typical eating habits.	○	○	○	○	○
I anticipate using the Diet Goals sheet provided.	○	○	○	○	○
I am interested in scheduling an appointment with a dietician or the weight management clinic.	○	○	○	○	○

Appendix C

Provider Surveys

PDSA 2

Please indicate your level of agreement with the following statements on a scale of 1 to 5, with 1 being 'strongly disagree' and 5 being 'strongly agree'.

1. Diabetic patients benefit from individualized diet teaching at routine clinic visits.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

2. I discuss specific dietary changes with my diabetic patients when they have poor glycemic control.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

3. I have adequate time to provide education to my diabetic patients when they struggle to control their blood sugar.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

4. I have used the Starting the Conversation (STC) tool with my diabetic patients.
    - Yes
    - No

If you answered 'Yes' to the above, please answer the following:

5. The STC is a useful tool for diabetes management.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

6. My patients find the STC helpful for improving diet.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

7. I have adequate time to administer and review the STC during appropriate appointments.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

8. I will continue using the STC to guide dietary discussions with my patients.
    - 1 (strongly disagree)
    - 2
    - 3
    - 4
    - 5 (strongly agree)

9. Please provide any feedback or suggestions you have concerning the use of the STC.

PDSA 3

1. Do you think it is helpful to have a diet recall tool available for nutrition counseling?
    a. Yes
    b. No

2. If “no” to previous, why?

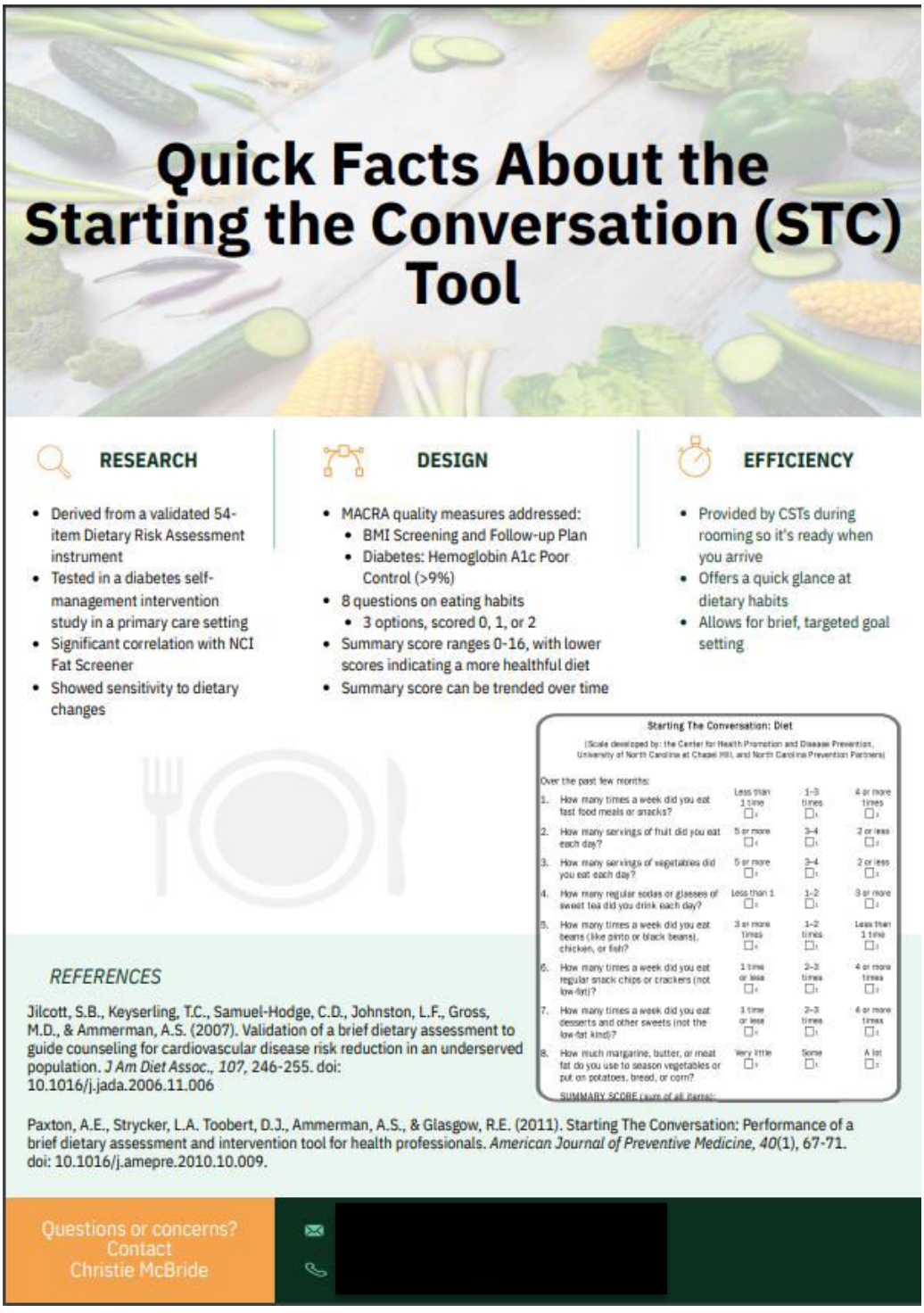
3. Do you like having a nutrition education sheet available for patients?
    a. Yes
    b. No

4. If “no” to previous, why?

5. What barriers do you face in providing nutrition counseling for diabetic patients?

Appendix D

Healthcare Provider Education



Appendix E

Patient Education: PDSA 3

Serving Size Guidance

How much is a fruit or vegetable serving?

Fruits

- A medium-sized whole fruit (like an apple)
- ½ cup fresh, frozen, or canned
- ¼ cup dried
- ¼ fruit juice

Vegetables

- 1 cup of leafy greens
- ½ cup fresh, frozen, or canned
- ½ cup vegetable juice

4-5 servings each are recommended daily. Scan to learn more:

Nutrition Education

Diet Goals

Look back at your high scores from the diet recall tool. Check out the corresponding diet tips below and see if you want to tackle one diet goal before your next A1C check!

Check out these resources for more ideas!

☐ **1. Cut back on fast food**

- Plan and prep meals and snacks ahead of time
- Use the freezer to store meals that can be quickly reheated (soups, chili, marinara)
- Buy healthier convenience foods, like salad kits and pouches of chicken, tuna, or salmon

☐ **2 and/or 3. Increase fruit and vegetable servings**

- Keep fresh fruit out where it's easy to grab or store frozen fruit and make a smoothie
- Make veggies the highlight of your meals by preparing a veggie wrap, grilling colorful kebabs, or topping a pizza with lots of veg

☐ **4. Find replacements for sweetened beverages**

- Flavor your water with lemon, cucumber, berries, or mint (or make ice cubes with watermelon or grapes)
- Choose flavored sparkling water (un-sweetened)
- Try naturally sweet herbal teas like cinnamon apple, mint, or berry. Drink hot or iced!
- Gradually dilute fruit juice to get used to less sweetness

☐ **5. Increase lean proteins**

- Try swapping out ground beef with ground turkey or chicken in recipes like chili or meatballs
- Fish and shrimp can be purchased frozen but cook quickly when thawed for a fast meal
- Try more plant-based meals that include beans, lentils, or tofu

☐ **6. Eat healthier snacks**

- Have healthy snacks handy, like nuts and seeds, hummus and vegetables, whole fruit, no-added sugar yogurt or kefir, whole grain crackers, and low-fat cheese

☐ **7. Eat healthier sweet treats**

- Check nutrition labels and avoid added sugars. Don't keep them around the house!
- Try desserts that use naturally sweet ingredients such as whole fruits, overripe bananas, dates, cinnamon, vanilla, or cacao powder

☐ **8. Choose healthier fats**

- Cook with olive, canola, or peanut oil instead of butter or coconut oil
- Instead of cheese, add avocados to your sandwiches, salads, or toast
- Try a salty snack of olives instead of chips or pretzels

Want more support for diet change? Ask your provider about meeting with a dietician or UK's Weight Management Clinic! Telehealth appointments are available.

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