Starting The Conversation
Performance of a Brief Dietary Assessment and Intervention Tool for Health Professionals

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Introduction: For chronic disease prevention and management, brief but valid dietary assessment tools are needed to determine risk, guide counseling, and monitor progress in a variety of settings. Starting The Conversation (STC) is an eight-item simplified food frequency instrument designed for use in primary care and health-promotion settings.

Purpose: This report investigates the feasibility, validity, and sensitivity to change of the STC tool, a simplified screener instrument for assessment and counseling.

Methods: Data from an ongoing practical efficacy study of type 2 diabetes patients in a diverse population (N = 463) were used to document STC validity, robustness, stability, and sensitivity to change from baseline to 4 months. Data were collected from 2008 to 2010, and they were analyzed for this report in 2010.

Results: The eight STC items and summary score performed well. STC items and the summary score were moderately intercorrelated (r = 0.39 – 0.59, p < 0.05). The STC summary score was significantly correlated with the NCI fat screener at baseline (r = 0.39, p < 0.05), and change in the STC summary score correlated with reduction in percentage of calories from fat (r = 0.22, p < 0.05) from baseline to 4 months. The STC was sensitive to the intervention, with intervention participants improving significantly more than controls on the summary score (M = 1.16 vs 0.46, p < 0.05).

Conclusions: The brief STC is a relatively simple, valid, and efficient tool for dietary assessment and intervention in the clinical setting. It is available in English and Spanish and is in the public domain. Researchers and practitioners are encouraged to assess its utility in other settings and with other dietary interventions.


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Methods

Design Overview

The STC was administered from 2008 to 2010 with other measures at baseline and 4 months as part of a patient-randomized practical effectiveness trial to evaluate the impact of interactive diabetes self-management intervention relative to “enhanced” usual care.

Recruitment

Recruitment is detailed elsewhere. Adults with type 2 diabetes were recruited from primary care medical offices within Kaiser Colorado (KPCO). Potential participants were mailed letters, including a postage-paid return postcard to decline further contact. If no postcard was received, a project recruiter telephoned to explain the study and determine eligibility. Inclusion criteria included (1) aged 25–75 years; (2) diagnosed with type 2 diabetes for at least 1 year; (3) BMI of ≥25 kg/m² and at least one other heart disease risk factor; (4) having access to a telephone and Internet; (5) ability to read in English or Spanish; and (6) ability to perform physical activity as assessed by the Brief Physical Activity Readiness Questionnaire. Taken together, the criteria were selected to target at-risk adult type 2 diabetes patients able to complete the requirements of the study. All procedures were approved by the KPCO IRB.

Of 2603 recruitment letters sent, 229 decliner postcards and 15 letters were returned. Of 2359 recruitment calls attempted, 544 patients were eligible and agreed to participate; 463 patients were randomized. The participation level was 82% (463/1700 = number of participants completing baseline divided by number confirmed eligible) or 37% (number of participants completing baseline divided by estimated eligible we attempted to contact; see Glasgow et al. for details). Participant characteristics are presented in Table 1.

Measures

The eight-item STC is shown in Figure 1. Response options for the survey items are organized into three columns: the left column indicates the most healthful dietary practices (scored 0); the center column indicates less healthful practices (scored 1); and the right column indicates the least healthful practices (scored 2). Item scores are added to create a summary score (range 0–16), with lower summary scores reflecting a more healthful diet and higher scores reflecting the greatest room for improvement. The STC is available in English and Spanish in the public domain, and may be reprinted and used without charge or permission.

Table 1. Baseline characteristics of participants randomized across three conditions

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All (n=463)</th>
<th>UC (n=132)</th>
<th>CASM (n=169)</th>
<th>CASM+ (n=162)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years, M±SD)</td>
<td>58.4±9.2</td>
<td>58.7±9.1</td>
<td>58.7±9.3</td>
<td>57.8±9.3</td>
<td>0.618</td>
</tr>
<tr>
<td>Female</td>
<td>49.8</td>
<td>51.5</td>
<td>44.6</td>
<td>53.7</td>
<td>0.231</td>
</tr>
<tr>
<td>BMI (M±SD)</td>
<td>34.8±6.5</td>
<td>34.8±6.5</td>
<td>34.4±6.2</td>
<td>35.3±6.8</td>
<td>0.388</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.525</td>
</tr>
<tr>
<td>American Indian/Alaskan</td>
<td>6.7</td>
<td>11.1</td>
<td>4.9</td>
<td>4.8</td>
<td>—</td>
</tr>
<tr>
<td>Asian</td>
<td>1.6</td>
<td>1.6</td>
<td>1.9</td>
<td>1.4</td>
<td>—</td>
</tr>
<tr>
<td>Black/African-American</td>
<td>15.4</td>
<td>12.7</td>
<td>17.8</td>
<td>18.4</td>
<td>—</td>
</tr>
<tr>
<td>White</td>
<td>72.0</td>
<td>70.6</td>
<td>74.1</td>
<td>70.7</td>
<td>—</td>
</tr>
<tr>
<td>Hispanic ethnicity</td>
<td>21.8</td>
<td>16.8</td>
<td>25.3</td>
<td>25.3</td>
<td>0.178</td>
</tr>
<tr>
<td>Income ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.241</td>
</tr>
<tr>
<td>&lt;49,999</td>
<td>47.3</td>
<td>50.4</td>
<td>45.7</td>
<td>46.0</td>
<td>—</td>
</tr>
<tr>
<td>50,000–89,999</td>
<td>35.2</td>
<td>36.6</td>
<td>33.5</td>
<td>35.7</td>
<td>—</td>
</tr>
<tr>
<td>≥90,000</td>
<td>17.5</td>
<td>13.0</td>
<td>20.6</td>
<td>18.2</td>
<td>—</td>
</tr>
<tr>
<td>High school or less</td>
<td>19.1</td>
<td>13.0</td>
<td>19.9</td>
<td>23.6</td>
<td>0.069</td>
</tr>
<tr>
<td>Low–moderate health literacy</td>
<td>5.9</td>
<td>7.6</td>
<td>6.0</td>
<td>4.3</td>
<td>0.495</td>
</tr>
<tr>
<td>Computer use (hours/week)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.190</td>
</tr>
<tr>
<td>0–2.5</td>
<td>16.3</td>
<td>15.1</td>
<td>16.6</td>
<td>16.6</td>
<td>—</td>
</tr>
<tr>
<td>3–6.5</td>
<td>17.7</td>
<td>21.2</td>
<td>20.2</td>
<td>12.4</td>
<td>—</td>
</tr>
<tr>
<td>7–8.5</td>
<td>6.1</td>
<td>4.5</td>
<td>5.4</td>
<td>8.0</td>
<td>—</td>
</tr>
<tr>
<td>≥9</td>
<td>60.0</td>
<td>59.1</td>
<td>57.7</td>
<td>63.0</td>
<td>—</td>
</tr>
<tr>
<td>Smoke cigarettes</td>
<td>10.8</td>
<td>9.1</td>
<td>10.1</td>
<td>13.0</td>
<td>0.531</td>
</tr>
</tbody>
</table>

*One-way ANOVA or χ² test, as appropriate
CASM, computer-assisted self-management intervention; UC, usual care control condition
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
   - 1–3 times
   - 4 or more times

2. How many servings of fruit did you eat each day?
   - 5 or more
   - 3–4
   - 2 or less

3. How many servings of vegetables did you eat each day?
   - 5 or more
   - 3–4
   - 2 or less

4. How many regular sodas or glasses of sweet tea did you drink each day?
   - Less than 1
   - 1–2
   - 3 or more

5. How many times a week did you eat beans (like pinto or black beans), chicken, or fish?
   - 3 or more times
   - 1–2 times
   - Less than 1 time

6. How many times a week did you eat regular snack chips or crackers (not low-fat)?
   - 1 time or less
   - 2–3 times
   - 4 or more times

7. How many times a week did you eat desserts and other sweets (not the low-fat kind)?
   - 1 time or less
   - 2–3 times
   - 4 or more times

8. How much margarine, butter, or meat fat do you use to season vegetables or put on potatoes, bread, or corn?
   - Very little
   - Some
   - A lot

SUMMARY SCORE (sum of all items):

Figure 1. Items and scoring instructions for the Starting The Conversation: Diet instrument

thus, measures of scale reliability were not calculated. Pearson product–moment correlation coefficients were computed at baseline to explore relationships among the STC items and summary score. To determine stability, Pearson product–moment baseline and 4-month correlation coefficients were calculated for the STC summary scale using usual care data only (n=110). Chi-square tests and t-tests were conducted, as appropriate, to test the STC items and summary score for robustness across a range of participant characteristics.

ANCOVAs were conducted, associating treatment condition with change in items and the summary scale from baseline to 4 months, to test for sensitivity to treatment. Baseline participant characteristics relating to the STC in univariate analyses were covaried. Data were collected from 2008 to 2010, and analyzed in 2010.

Results

Participants

A relatively diverse, heterogeneous sample of 463 adult outpatients with type 2 diabetes was recruited (Table 1). The sample was fairly representative of type 2 diabetes outpatients in the local area, based on distributions of age, race and ethnicity, BMI, and other factors compared to diabetes registry data. Most participants were older (mean age=58 years) and overweight or obese (mean BMI=34.8 kg/m²). A

range of income and education levels was represented. Slightly higher percentages of the sample were Hispanic and African-American than in the KPPO population of type 2 diabetes patients (22% Hispanic in the sample vs 17% in KPPO records and 15% African-American in the sample vs 11% in KPPO records). Twelve participants completed surveys in Spanish. There were no significant between-condition baseline differences on any of the measures in Table 1.

Descriptive Data

All of the STC items performed well. The measure was robust across gender, education level, smoking status, health literacy, and computer experience. Exceptions were that (1) older participants generally reported consuming less fast food ($\chi^2=10.2, p<0.01$); soda ($\chi^2=6.5, p<0.05$); and chips ($\chi^2=12.1, p<0.01$) and more vegetables ($\chi^2=9.4, p<0.01$), and (2) non-Hispanic participants generally reported consuming less soda ($\chi^2=17.8, p<0.001$). Because of these differences, baseline age and Hispanic ethnicity were covaried in further analyses.

STC items were moderately intercorrelated, as expected because items assess different aspects of healthful eating. Individual items correlated significantly with the summary score ($r=0.39-0.59, p<0.05$). The fruit and vegetable items correlated most highly ($r=0.41$), suggesting a distinct subset.

Temporal Stability and Validity

In terms of construct validity, the correlation between the baseline STC summary score and fat intake as measured by the NCI fat screener was $r=0.39, p<0.05$. Change in the STC summary score correlated significantly with reduction in fat intake, $r=0.22, p<0.05$. January 2011
Four-month summary score correlations for participants in the usual care condition ranged from only $r = 0.40$ to 0.62 for individual items and $r = 0.66$ for the summary score (all $p < 0.05$), indicating that the assessment was stable over time without intervention.

### Sensitivity to Change

The STC was sensitive to the intervention (Table 2). Randomized intervention participants improved significantly more than controls on two of the eight STC items (fast food and desserts) and on the summary score ($M = 1.16$ vs $0.46$, $p < 0.05$).

### Discussion

Overall, the brief eight-item STC tool identified healthful and unhealthful dietary behaviors in a diverse sample, indicating the measure’s feasibility for use in public health and primary care settings. These results are similar to performance of the longer Food Habits Questionnaire and Rate Your Plate. The STC was robust across a variety of participant characteristics, was stable over time in the absence of treatment, was sensitive to treatment, and was a reasonably valid measure of dietary intake compared to the previously validated dietary-fat–focused NCI screener. The current study used the STC for assessment, but previous studies have employed it as an intervention tool.

The STC offers an attractive option for dietary assessment and intervention by nondietitians in busy clinical settings. To our knowledge, it is the shortest instrument available designed specifically to help clinic staff identify atherogenic dietary patterns and guide counseling.

Although the STC compared favorably to serum carotenoid levels in a previous sample, the tool has not been validated against a criterion standard of dietary intake (e.g., 3-day dietary recalls) in a large-scale trial. Other limitations include data from a single site (although relatively heterogeneous) and the absence of criterion standard bioassays. Further work is recommended to validate the STC in other populations and across multiple interventions focused on improving dietary intake.

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### Table 2. Change score in STC items and summary score, all cases and split by treatment condition, M±SD

<table>
<thead>
<tr>
<th>Food Item</th>
<th>All cases (n=372)</th>
<th>UC only (n=114)</th>
<th>Tx only (n=258)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast food</td>
<td>0.28±0.79</td>
<td>0.06±0.73</td>
<td>0.38±0.80</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fruit</td>
<td>0.17±0.61</td>
<td>0.13±0.47</td>
<td>0.18±0.66</td>
<td>0.397</td>
</tr>
<tr>
<td>Vegetables</td>
<td>0.12±0.64</td>
<td>0.06±0.58</td>
<td>0.15±0.66</td>
<td>0.211</td>
</tr>
<tr>
<td>Sodas</td>
<td>0.07±0.58</td>
<td>0.09±0.67</td>
<td>0.07±0.54</td>
<td>0.760</td>
</tr>
<tr>
<td>Beans</td>
<td>–0.03±0.68</td>
<td>0.00±0.64</td>
<td>–0.05±0.70</td>
<td>0.495</td>
</tr>
<tr>
<td>Chips</td>
<td>0.15±0.67</td>
<td>0.07±0.65</td>
<td>0.18±0.67</td>
<td>0.144</td>
</tr>
<tr>
<td>Desserts</td>
<td>0.10±0.67</td>
<td>–0.01±0.64</td>
<td>0.15±0.68</td>
<td>0.035</td>
</tr>
<tr>
<td>Margarine</td>
<td>0.09±0.67</td>
<td>0.06±0.61</td>
<td>0.10±0.69</td>
<td>0.584</td>
</tr>
</tbody>
</table>

Eight-Item summary score 0.94±2.08 0.46±1.93 1.16±2.11 0.002

STC, Starting The Conversation; Tx, treatment; UC, usual care control condition

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### References

1. CDC. The guide to community preventive services. [www.thecommunityguide.org](http://www.thecommunityguide.org).

www.ajpm-online.net