Meta analysis of the glycemic outcomes with the use of the *Conversation Map*™ tools to deliver diabetes self-management education and support (DSME/S)

Barbara Eichorst, MS, RD, CDE Vice President of Clinical Practice, Healthy Interactions
Rachel Raia, MPH, CPHQ Data and Research Consultant, Healthy Interactions

Introduction:

Healthy Interactions' *Conversation Map* tools are the most deployed DSME/S curriculum in the world. The diabetes Map tools were developed in collaboration with the American Diabetes Association in the U.S.A. and the International Diabetes Federation outside of the USA. Over 80,000 diabetes educators have been trained to facilitate the Map sessions in over 120 countries. The effectiveness of the Map tools can vary from one cohort to the next due to cultural implications, although the program has been translated and made culturally relevant for each country in which it is used. Previous research assessing outcomes for specific cohorts of patients has been collected, but this is the first study to evaluate Map tools outcomes at the macro level.

Purpose:

To evaluate the outcomes of *Conversation Map* tools from a larger, more diverse sample size, representing patients from many countries and cultures, as measured by change in HbA1c.

Objective

Conduct a meta-analysis to evaluate glycemic outcomes using *Conversation Map* tools to deliver diabetes self-management education and support (DSME/S).

Subjects

A total sample size of 851 people with diabetes participating in the Map tools programs were included, from 9 different studies, representing 5 different countries (Israel, Italy, Japan, Taiwan and the United States). See figure 1 for country breakout.

Methods

A meta-analysis was conducted in order to integrate HbA1c outcomes from several sources. Only studies that reported the sample size, were statistically significant (p-value < 0.05), and had either baseline and post-study A1c measures or the overall change in A1c were included. See figure 2 for study selection flowchart. All studies lacking these pieces were excluded from the analysis. A weighted average, based on the reduction in A1c and sample size for each study, was computed. Factors such as time between baseline and post-study measurements (i.e. 3, 6 months, 1 year, etc.), demographic composition (i.e. age, sex, duration of diabetes diagnosis), baseline clinical measurements (i.e. baseline A1c) and the utilization of combination therapy (i.e. weight loss interventions) were not taken into account.

Statistical Analysis

A meta-analysis was conducted in order to integrate HbA1c outcomes from several sources. Studies that lacked statistical significance (p-value > 0.05) were excluded from the analysis. See figure 3 for total sample size used broken out by study.

Results

Of 38 research studies that were cataloged between 2009 and 2015, 9 were found to have met the criteria detailed above. All cohorts showed a reduction in A1c, while none had an increase or "no change" in A1c. The weighted average for all relevant cohorts within these studies was calculated and found to be -0.84%, as shown in figure 4.

Figure 1. Sample Size (n) by Country

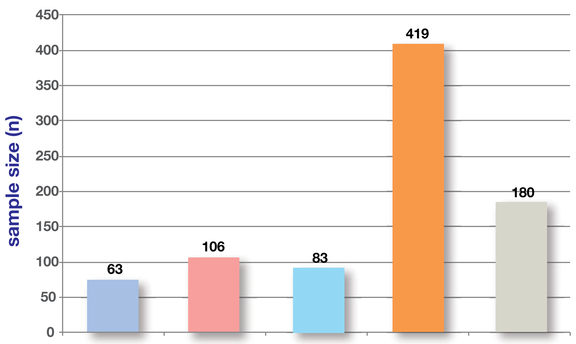


Figure 2. Study Selection Flowchart

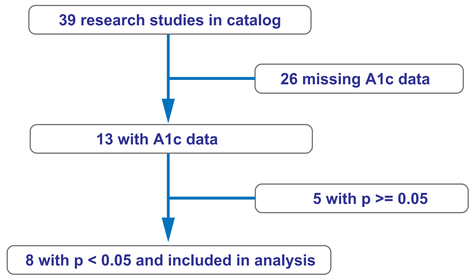
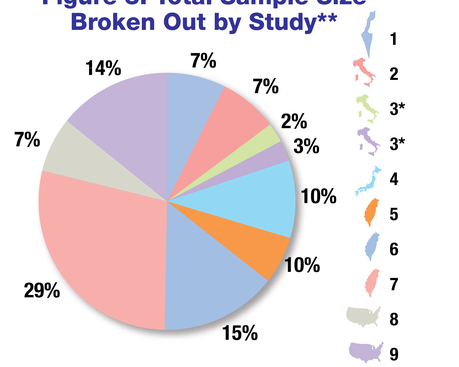


Figure 3. Total Sample Size Broken Out by Study**



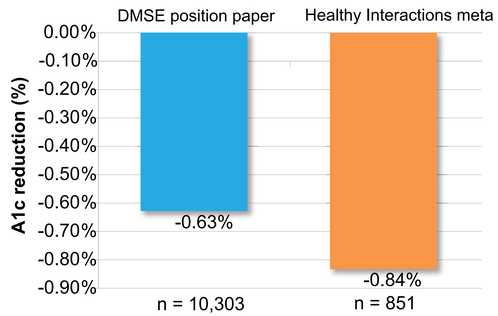
* Two different cohorts of participants with different sample sizes and outcomes were included from this study, which is why it is listed twice.
** Numbers in the legend correspond to the numbers assigned to each study in the references section.

Figure 4: Healthy Interactions Studies Included in Meta-Analysis

ID**	Country	Change in % A1c	n (sample size)	p-value
1	Israel	-0.60	6	0.022
2	Italy	-0.40	63	<0.01
3*	Italy	-0.50	21	0.04
3*	Italy	-0.60	22	0.02
4	Japan	-2.00	83	<0.01
5	Taiwan	-3.35	51	<0.05
6	Taiwan	-0.50	125	<0.0001
7	Taiwan	-0.27	243	<0.01
8	USA	-0.40	59	0.008
9	USA	-1.13	121	0.004
			851	

* same study but two entries, one for each cohort with statistically signifcant HbA1c outcomes
**Numbers in the legend correspond to the numbers assigned to each study in the reference section.

Figure 5. DSME position paper 2015 vs. Healthy Interactions %A1c Reduction Comparison



DSME/S Position Paper Comparison

In order to compare our findings to a larger sample size, we conducted another meta-analysis of studies internally cited in the DSME/S position paper[10] that showed that DSME/S reduced HbA1c. It is important to note that the type of DSME/S provided was not taken into account and included a variety; not specific to Conversation Map tools. Of these studies, one could not be located[16] and three failed to include change in A1c and/or the sample size[12,13,17]. These four studies were excluded from the comparison analysis. One study[14] did not report a p-value, but since it was a meta-analysis and included a large sample size, we assumed that the component studies were statistically significant which allowed for the manuscript to be published. This one was included along with the remaining studies[11,15] in the comparison analysis for a total of three studies and combined sample size of 10,303. As shown in figure 5, a weighted average was calculated for this new group, which had an HbA1c reduction of 0.63 percentage points, compared to the reduction of 0.84 percentage points that the meta-analysis specific to Healthy Interactions showed.

Conclusion

Regardless of the country in which the diabetes Map tools programs are facilitated, clinical outcomes are positive with an almost 1.0 percentage point reduction in HbA1c. Map tools are highly efficacious in delivering self management-education as evidenced by significant improvement in glycemic control upon completion of the Map sessions. Finally, the DSME position paper findings were in agreement with that of our meta-analysis, showing a significant reduction in HbA1c.

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Position Paper Comparison

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Contact the Authors
Barbara Eichorst at beichorst@healthyinteractions.com
Rachel Raia at rachelraia@gmail.com