4.5 FOCUS GROUPS

The focus groups provided insight into the perceptions of patients receiving diabetes education using the conversation map approach versus the traditional PowerPoint presentation. Analysis of transcripts from the focus groups revealed major themes, some of which are common to both education groups and some are only found in either one of the groups. Common themes that emerged from both types of education methods included the benefits of early education uptake, the need for specialized education, and education encouraging behavioural change. Additional themes that emerged only from the conversation map group included experiential learning environment, self-directed approach to learning, feeling of social support, and visualization of diabetes management. An additional theme found only in the traditional education group included low group interaction. The themes are summarized in Table 10 and sample quotes from participants are included in the subsequent descriptions to support these themes.
Table 10. Major Themes from Focus Groups

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<th>Traditional Education</th>
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<td>Visualization of Specific Diabetes Management Needs</td>
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4.5.1 Common Themes

Analysis of the transcripts of both the conversation map and the traditional education focus groups identified common themes which included: benefits of early education uptake, the need for specialized education, and education encouraging multiple lifestyle management behaviour changes. These themes are summarized in the following section. A code (in brackets) follows each quote. For the individual participants, the acronym for their group (i.e., TE for traditional education, CM for conversation maps), their sex (i.e., F for female, M for male) are coded, followed by the number of the participant.

Benefits of Early Education Uptake

All participants in both focus groups expressed the importance of receiving diabetes education early in their diagnosis in order to succeed in managing their diabetes as well as ongoing education after diagnosis to support their management skills. One participant who was diagnosed with type 2 diabetes only 3 months before enrolling in this study said:

*I really think that if I’d been given this right at the start of my journey with diabetes, it would have been very beneficial… because I was piecing together the thing (diabetes knowledge) by myself… so I definitely think it’s (diabetes education) a benefit from someone who have been just diagnosed.* (TEM1)

Another participant with a nursing background, who was diagnosed with diabetes a month before receiving education, expressed the following:
I think my education experience (Conversation Map) reinforced what I didn't know and reminded me of a few management strategies that I had forgotten about. In a couple years, it’s probably a good idea to come back and revisit this again. (CMF1)

**Need for Specialized Training**

When told of the diagnosis of diabetes by a primary health care physician, many participants agreed that the doctors have a short window of time during the appointment to discuss details of diabetes management. Many participants spoke of the need for diabetes educators who are specialized in providing diabetes education. The following quote by a participant who attended the traditional education refers to her experience at her doctor’s appointment when she was diagnosed with type 2 diabetes:

*I went to my doctor, and she gave me a form to come to Diabetes Care Guelph.*

*For me, that was the best thing because the doctors don’t have time to discuss this (type 2 diabetes) with you.* (CMF3)

**Education Encouraging Multiple Lifestyle Management Behaviour Changes**

Many participants from both focus groups expressed that receiving diabetes education, no matter what delivery method is utilized, encourages behavioural change. One participant reported the following:

*So, you know, it helps you, I guess modify your behaviour, you know, throw away all those old habits that you had which were not so good…*
At least for me… it helped me realize yeah I got to stop those particular things that were not so good. (TEM2)

The participants who attended the conversation map as well as participants who attended the traditional education seemed to have succeeded at setting and achieving lifestyle management goals in the areas of nutrition, medical management, blood glucose management, and physical activity. One participant spoke of setting a nutritional goal around eating smaller meals and said:

*I eat smaller amounts of food a little more frequently and now test more often during the week.* (CMF1)

Another participant spoke of possible nutrition changes:

*Nutritionally, I’m not afraid to have sugar now. One of the things you think with the diabetes, is that you can’t have any sugar at all. Food is very important. It’s realizing that you can have these foods, but smaller amounts. It’s eating more regularly. The meat portion being the size of a deck of cards was the sort of the thing I think we took that home with us.* (CMM2)

A participant reported feeling more confidence in reading nutrition labels:

*…carefully reading labels, I was more looking at ingredients and now I am looking at the nutritional information.* (TEF2)

When probing about goals for physical activity, participants felt comfortable setting physical activity goals after attending the conversation map and viewed physical activity as an important piece of type 2 diabetes management. One participant shared his own physical activity goal:
My goal was to sometime this month get back into a routine of 3 times a week back at the gym … I’ve had a gym membership for years. We had children… … a 1 ½ yr old and a 4 yr old. So of course that puts it down the toilet, because you don’t have any time; but I’ve pretty much realized, gotta do it, went home and had a conversation with my spouse and said you know this is important, I’m going to have to make a concerted effort to do this. Yeah, that certainly influenced me to try and get there every day. (CMM1)

When probed about frequency of testing blood glucose readings, one participant explained:

The class got me to start checking my blood and actually recording it. (TEM2)

4.5.2 Additional Conversation Map Themes

In addition to the common themes presented above, analysis of the transcripts of the conversation map focus groups revealed five other accompanying themes: experiential learning environment, self-directed approach to learning, feelings of social support, behaviour changes, and visualization of specific diabetes management needs.

Experiential Learning Environment

The conversation map education method integrated participants’ personal experiences and stories with diabetes into the educational process so that learning was based on the sharing of knowledge, attitude, and behaviours. One participant summed up the general consensus of the experience by stating:
I guess the only thing I want to stress again that it was held together with a group of people that all had a common issue and that would be vocal and participate together to get answers and share answers for questions they had. (CMM1).

This method of education was favoured and those who attended who expressed feelings of acknowledgement with expertise developed after living with diabetes. A participant spoke of his feelings of acknowledgement when he said:

If people had questions, it would be opened up to the group to discuss. I could jump and share my own experience, which was nice... The interaction part of it is far superior to a lecture. (CMM2)

Besides formal learning, participants reported an even greater amount of learning that can result from discussing everyday experiences. One participant who was experiencing symptoms of hypoglycemia expressed the following:

I found out I’m not the only one that has that problem. It doesn’t make sense to me, but I learned from others’ experiences with it. (CMF1)

**Self-Directed Approach to Learning**

Although the same materials were covered in both education groups, many participants reported taking away different pieces of information from the conversation map based on their learning goals going into the education session. One participant spoke of his experience in the class:

We actually went around the table addressing each person’s particular issue...

Everyone had a very equal opportunity to get at the bottom of whatever it was they wanted to know. (CMM1)
When asked specifically about the conversation map approach to providing education, one participant spoke about self-directed learning, which he defined as having some control over the topics discussed through facilitation rather than a teaching/learning approach. He said:

*I think the PowerPoint presentation is a great way to get things across, but if there is not engagement of the people in the room, then really they just take in what’s on the presentation and go home with it and I think they’re probably missing out on some good information they could have gotten.* (CMM2)

Another participant spoke of how the conversation was directed to an area that interested her during the education session, which was on medication-dosing specific to her shift work schedule. She said:

*We addressed my problem of shift work and trying to keep things on a routine. I’ve had to space my medication a bit differently that ball park hours. My knowledge for medications did increase.* (CMF1)

**Feelings of Social Support**

Most participants felt that the conversation map created an environment that was conducive to social learning. Some participants felt that individuals with type 2 diabetes were socially supported. This feeling of social support acknowledged the patients’ understanding of the psycho-social impact of diabetes. One participant described his experience having diabetes, and feeling a type of bond with the other individuals in the conversation map group setting:

*It’s good [to know] you are not alone.* (CMM2)
When asked about how hearing other’s experiences changed their attitude toward diabetes, another participant said:

*It confirms the things I’ve observed anyway which is you can live a very normal life. You can live well.* (CMM1)

Hearing other’s experiences with diabetes seemed to change participants’ feelings of isolation to feelings of social acceptance. This appeared to encourage people to interact more with one another, as one participant said:

*Well, it definitely was safe (the environment) and it was nice to talk about a problem we all have in common… it’s just not something you do.* (CMF1)

**Visualization of Specific Diabetes Management Needs**

Most participants who attended the conversation map education reported that the map helped them visualize strategies that they were not using in their own diabetes management. One participant thought:

*I think the map reinforced what I didn’t know* (CMF2)

Another participant said:

*… the picture that sticks to my head is the picture of the plate, which is you know half the plate of vegetable and a quarter of starchy food… just a quarter and that was a big thing for me to visualize. When I saw that I thought yeah I’m not doing that.* (CMM2)

Participants reported that the map prompted them to formulate questions. One participant was quoted discussing how the map helped her ask questions about diabetes management:
The conversation map opens it up and gives you clues and reminders if you will about what questions you may have and as things are discussed with this, it comes up that there are more points covered and it’s not like ‘oh I meant to ask about that’. (CMF1)

Participants felt that the conversation map tied all management strategies together, presented them in a way that was not overwhelming, and made easier to identify their own areas of concern. One participant stated:

The visualization of a lot of the topics really helped for me. Right away my eyes were drawn to things I didn’t quite understand- A1c, which I should have understood. I have known the term but I didn’t recall what it meant. I think it was easier for me to identify things that I wasn’t that familiar with and to make sure to pursue that when we started to get answers. (CMM1)

Another participant said:

It was kind of interesting to see everything in front of you. It’s kind of childish with the pictures, but it works. In my opinion this worked because you don’t want to overwhelm people that are coming in to learn about this, that you have to look after it, or you are going to lose your toes, or kidney function. This didn’t overwhelm anyone. (CMF1)

In summary, the participants had strong positive comments about the use of conversation maps in patient education.

4.5.3 Additional Traditional Education Theme

The traditional education focus group found only one additional theme during their session. This additional theme was defined as low group participation or interaction.
Low Group Participation/Interaction

All individuals who participated in the traditional education focus group commented about low group interaction and lack of participation. When asked about group participation, a participant shared:

*We didn’t really have very much interaction, it was more of questions if you had any.* (TEM1)

Another participant reported a low interaction level as well, but felt that she had an opportunity to ask her questions:

*I thought there wasn’t much interaction... I don’t generally talk a lot in a group; but the subject matter was too important not to ask questions so I felt a comfort in doing that.* (TEF2)

One participant felt uncomfortable asking questions during the slideshow presentation. When probed as to why he felt this way, he stated:

*To open up, you need to feel like they (the other participants and the facilitators) are on your side. I didn’t know the group or feel comfortable.* (TEM2)

When probed further and asked what would have made him feel more at ease participating in the group, he responded:

*I would want the lifelines in front of me and explained rather than put on slides.* (TEM2)

Another participant from the same focus group shared his insight as to why there may have been low participation:
I think when you get to our age, it’s not telling us these vegetables are good for us. I know what is good and I know what is not good. I want to create conversation and discuss my struggles with others and know that I’m not alone. The information you were trying to give is valued but the lesson plan needs to be revised. The powerpoint presentation from the television, was more guided toward high school or grade school. (TEM1)

One participant reported the slides were distracting her from participating:

I was more focused on what the presentation was going to be, than on how it applied to me. It (the presentation) was more of absorbing or learning. When I’m getting the information and trying to process it, it was time for the next slide. I didn’t even think about asking questions until after the slideshow was over, and by then I couldn’t think of any questions. (TEF1)

In summary, patients learned some self-management information on their own from the PowerPoint presentation; however, there was an overall feeling that the group could have learned more from each other had they been given the opportunity to discuss coping and self-management strategies openly in a group setting.
CHAPTER 5

DISCUSSION

Determining if conversation maps are more effective than a traditional group education method in improving knowledge, attitudes, and behaviours associated with diabetes self-management is essential in order to evolve diabetes education techniques, and contribute to evidence-based research. In this chapter, the results of this research are discussed in relation to relevant findings from other studies.

To the researchers’ knowledge, this is one of the few studies examining the effects conversation maps and the only study that evaluates changes in patient knowledge, attitude, and behaviours when using this tool compared to traditional group education (using a PowerPoint presentation design) in an adult diabetes population. Thus, most of the comparisons are based on existing studies using other forms of adult diabetes group education and their effects on patient knowledge, attitude, and behaviour changes. A description of strengths and limitations of the present study is included. In addition, this chapter looks at the themes uncovered in the focus groups in more detail and, where possible, compares them to findings from similar studies reported in the literature.

5.1 RESEARCH PARTICIPATION

The total number of people screened to participate in the present study was 100. Those who did not fit the inclusion criteria for participation were classified as screen fails. Of the total number of people screened, 65 people were screen fails. The main reasons for screen fails included having diabetes for more than 5 years, receiving diabetes education from a different diabetes education centre previous to the appointment, and
being >65 years of age. Out of the 35 people who enrolled in the research study, 21 participants completed the study. The 14 people that withdrew from the study all reported withdrawing due to lack of time to commit to attending education groups. Our retention rate of 60% was consistent with outcomes found in other studies examining diabetes group education (63).

5.2 CHANGES IN HEMOGLOBIN A1C

In the present study, apart from looking at the effectiveness of different DSME delivery methods on changes in KAB, a secondary objective was to examine differences in changes in Hb A1c. The method of diabetes education did not have a significant difference on the short-term changes in participants’ Hb A1c scores. The mean change in Hb A1c from baseline to 3 months did not differ significantly between the conversation map education group and the traditional method of education group (1.3% and 0.8% respectfully; p = 0.59). Thus, hypothesis 1 as stated in Chapter 1 is negated and this finding is supported in the literature. A study in 2002 by Holtrop found no difference in changes in Hb A1c at six months between an intervention and control group, where the intervention group received diabetes group education and the control group received routine individual face-to-face follow-up appointments only (64). In Holtrop’s study, there was no change in mean Hb A1c concentrations from baseline to six months for participants in the control group, whereas participants that were assigned to received education through a group program had a mean reduction of 0.4% in Hb A1c (64). Another study by Rickheim (2002) observed significant changes in Hb A1c for adults receiving group education compared to individual education used as the control (51). The
study found no difference in Hb A1c six months after intervention between the intervention and control groups, although the intervention group had a significantly higher Hb A1c at baseline. The mean Hb A1c change from baseline to six months for participants in the intervention group was 2.5% reduction compared to the control group’s mean reduction of 1.7%. The research found that the difference in Hb A1c improvement was marginally greater in subjects receiving group versus individual education ($p = .05$) (51). A majority of the improvement in Hb A1c was achieved by 3 months in each educational setting (51). In the present study, there was no significant difference in Hb A1c changes between groups using different educational delivery methods. One reason for insignificant findings in Hb A1c concentrations (through education intervention) is that improvements in Hb A1c concentrations in both groups may have been due to pharmacological interventions or treatment changes during the research. Observing pharmacological treatment changes for the duration of this study would have been advantageous and could have been controlled. Associating changes to different education methods utilized would be difficult, since no controls were in place for diabetes medication changes. Further research is needed to identify if different methods of education could have an impact on Hb A1c levels in the long term with controls in place for changes in diabetes medication.

5.3 CHANGES IN KNOWLEDGE

Managing diabetes properly in accordance to clinical practice guidelines and making behaviour changes are largely influenced by knowledge, attitudes, and practices. Using a coded knowledge evaluation form (Appendix F, Coded Knowledge
Questionnaire), knowledge of participants in both groups studied was compared at baseline and at 3 months after education was received. The overall pre-test knowledge scores at baseline were low, with a mean score of 15.20 in the conversation map group and a mean score of 14.73 in the traditional education group. When adjusting for age using analysis of covariance, participants in the study aged less than or equal to 60 years scored significantly higher in attitude score in the need for special training (p=0.015), seriousness of type 2 diabetes mellitus (p=0.021), and psychosocial impact of the disease (p=0.033) three months after education than participants older than 60 years of age. No other existing research was found in the literature showing similar results. One potential reason for the greater attitude changes in the participants less than or equal to 60 years of age could be that they have more comfort level with facilitated non-didactic learning approaches. DSME was once didactic in nature and did not always focus on facilitation of learning (4). Participants over the age of 60 may be used to receiving health care information with a lecture-style learning approach. More research needs to be conducted in this area to ascertain why participants less than or equal to 60 years of age showed significant improvements in attitude scores.

With regards to research evaluating knowledge changes after receiving different methods of DSME, a meta-analysis review identified four studies that measured knowledge changes four to six months after education was received (48). Three out of the four studies showed a significantly greater knowledge score in the intervention groups which received group education compared with the control group which included participants receiving either individual education or were on a waiting list to receive education. The fourth study found no significant knowledge score changes between the
intervention group which received seven hours of group education compared to a control group which received five hours of education through individual appointments. In all of these studies, the educators were dietitians and nurses (49). Similar to the studies on knowledge improvements in group education, this study showed significant improvements in knowledge scores of the conversation map group at post-test 1 and post-test 2. The significant findings further illustrate the usefulness of a DSME method that is directed by participants, focused on application, and provided opportunities for learners to seek new information. The traditional method also showed marginal knowledge improvements; however, the changes were not significant (65). The effectiveness of group education in providing information to patients with diabetes is apparent in clinical research. Therefore, in this current study which compares two methods of group education, it is not surprising that both forms were effective at increasing knowledge scores, neither one more significant than the other when compared at baseline nor at three months after receiving education. Again these findings negate hypothesis 2 stated in Chapter 1.

5.4 CHANGES IN ATTITUDES

The diabetes attitude questionnaire that was adapted for this study was broken down into five subscales: need for special training, seriousness of diabetes, value of blood glucose control, psychosocial impact of diabetes, and patient autonomy. When attitude scores were compared right after education was received, two subscales showed significantly improved attitude scores: seriousness of diabetes and psychosocial impact of diabetes. The conversation map intervention did not have a significant impact on the
three other subscales right after receiving education. However, three months after education was received, four out of the five attitude subscales showed significant improvements in attitude scores, with the exception of patient autonomy (i.e., a measure of the patient’s interest in being an autonomous decision-maker regarding diabetes care) which showed no significant improvement. The finding of no between group difference in patient autonomy either at baseline or three months after receiving education paralleled a study conducted by Anderson et al. in 1995 (66) which showed that in a group of educated people, most possessing post-secondary education, the baseline mean score for patient autonomy was 4.14 on an attitude Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). In the present study’s findings, the mean pre-test score for patient autonomy in the conversation map group was 3.59 and in the traditional group was 3.65 based on a similar Likert scale scoring technique (Appendix H, Diabetes Attitude Questionnaire Formulae). The participants in both the conversation map group as well as the traditional education group were well educated, with all participants having at least a high school education, and most some form of post-secondary education. Results from the conversation map participants shared another similarity with the findings from Anderson et al.’s study (66), where attitude concerning the psychosocial impact of diabetes showed modest improvements. However, Anderson et al.’s intervention was a 6 week group education program which did not use conversation maps and had a wait list of patients as the control group (66).

Obtaining post-test 1 data right after education was received may have been a limitation of the study. Participants may not have had adequate time in the 2-week period between education sessions to practice setting goals and changing self-management
behaviours relevant to diabetes. They may neither have seen the value in making behaviour changes nor associated those changes to positive outcomes in managing blood glucose control. Perhaps this is a reason for only two out of five attitude subscales showing significant change in the conversation map group. Interestingly, at post-test 2 which was measured three months after education was received, four out of five attitude subscales showed significant improvements in the conversation map group when measuring significant differences between the two groups. This may indicate that conversation maps have more impact on participants’ abilities to set goals and change self-management behaviours than traditional education. One reason conversation maps may have a greater impact on changing attitudes toward diabetes is their ability to address more learning domains than traditional methods of education. Both methods of education seem to capture participants’ abilities to learn, comprehend, and critically think about applying learned knowledge into self-management strategies. The conversation map method seems to go beyond stimulating this learning domain, and also addresses the affective domain of learning by allowing participants to share stories of their diabetes experiences and connect on an emotional level, relating to one another’s stories of trials and tribulations when managing their diabetes. By sharing stories, they perhaps attach value to managing blood glucose levels by learning from others’ experiences and values. Others’ beliefs perhaps influence changes in their own behaviours, and over time cultivate changes in their attitude toward managing their disease.

5.5 FOCUS GROUPS

Focus groups were conducted to determine perceptions of DSME methods. The focus groups were transcribed and themes were identified. These themes support the
quantitative findings of this research and are discussed in this section. In particular, the quotes described in the results (Chapter 4) support hypothesis 3 which states that participants (more so from the conversation map group) had positive perceptions of the education delivery methods.

5.5.1 Common themes

Common themes were identified for both DSME methods. When participants were asked about the usefulness of the education content in both groups, perceptions around the importance of knowledge uptake, the need for diabetes education, and behavioural outcomes as a result of the educational experience were discussed.

Common Theme 1: Benefits of Early Education Uptake

Many participants spoke of the diabetes education being provided “just in time” and recognized the importance of some form of diabetes education being helpful regardless of the delivery method of education they received. This is similar to the findings from a study conducted in 2003 using focus groups to uncover type 2 diabetes patients’ perceptions on diabetes education, which illustrated that patients identified the need for early intervention following diagnosis (69).

Common Theme 2: The Need for Specialized Education

In both conversation map and traditional education groups, participants felt a need for, and found value in, health care professionals and diabetes educators. They seemed to recognize their role in self-management as the learner and the decision maker regarding
their disease. After receiving education from diabetes educators, participants felt that they were provided with the tools to manage their diabetes and felt more confident about the cause and controllability of the disease. This finding leads us to believe that both forms of DSME supported the common sense model regardless of the delivery method of education. Participants using conversation maps were encouraged to discuss and acknowledge diabetes health risks as they perceive them, as well as their individual motives for making changes in their self-care behaviors. By identifying their motives, they can proactively respond to potential consequences of the disease. By accurately perceiving threats to their health, patients can improve their self-care by responding to their symptoms and situations to minimize adverse outcomes. Through active conversation, participants explore what has worked well. This method of learning reflects the common sense model which suggests that beliefs about health threats are explained by subjective illness representations integrating with existing schemata to make sense of symptoms. Representations are cumulative, formed and developed based on information receipt and experiences (39).

**Common Theme 3: Education Encouraging Multiple Lifestyle Management**

**Behaviour Changes**

All participants in both focus groups made behavioural changes between the time education was received to the time focus groups were conducted which was approximately 3 months in duration. It appeared that in the conversation map group, participants tended to make more than one lifestyle change when it came to their diabetes self-management compared to the traditional education group. A reason for this may be
associated with participants speaking of being able to identify and direct their learning to areas that actively interested them. Perhaps being able to identify the need for change and discuss the readiness for change allowed more goals to be set and accomplished. Both methods of education delivery support the stages of change model in that there is information around the need for lifestyle changes in managing diabetes. However, the discussions provoked by the conversation map perhaps increased patient confidence to make changes through feeling socially supported. In the conversation map group, participants seemed to achieve more goals that would result in improved glycemic control, such as increasing exercise and using controlling portion sizes at meals. According the theory of change model, these would be examples of participants acting on a specific goal to achieve a desired outcome (33). These participants would have progressed from contemplation, through preparation, and into the action stage of achieving a goal. In the traditional method group, there was more discussion around preparing to set goals. Some participants reported goals about discussing potential changes and benefits of these changes with their family. Although setting a goal to encourage discussion shows improvement in perceptions of social acceptance, these goals would be classified as steps toward preparing to set behavioural goals. Therefore, the traditional education group seemed to progress through the contemplation phase into the preparation phase, with less participants fully committing to a behavioural action. For example, participants set goals around discussing the potential benefits of a behaviour change, such as the benefits of checking blood glucose levels with a glucometer, rather than actually checking blood glucose reading. More research on moving patients from one stage to the next (e.g., from preparation to action) is needed.
5.5.2 Conversation Map themes

Some themes were only identified in the conversation map group. The facilitation of learning seen in the use of conversation maps allowed participants to direct their own learning while they gathered more information as they shared their own experiences. Perhaps with participants being more involved in the learning process through facilitation can lead to further themes being uncovered.

Conversation Map Theme 1: Experiential Learning Environment

Discussion around personal stories and experiences seemed to be a prominent piece and distinguishing factor in the conversation map education group. This method of learning was favoured by participants as a creative way of sharing stories, knowledge, attitude, and previous behavioural change. Hearing others’ stories of experiences with diabetes, whether these were stories of their own journey with diabetes, or those of another friend or family member’s journey, seemed to increase participants perceived vulnerability to the disease, supporting the common sense model (32). For example, one participant in the conversation map group stated that they had heard hypoglycemia before, but never took the opportunity to learn more about it because they never thought it would happen to them. After hearing another person’s experience in treating a hypoglycemic episode, they found this information more relevant stating “if it could happen to them, it could happen to me”. According to Bandura’s social cognitive theory, social interactions can influence learning and confidence in skills performance (42). During the conversation map focus groups, participants spoke of being involved in
discussions and interacting with others during their education sessions. Having diabetes educators play the role of facilitator rather than instructor, participants were able to teach others by sharing their own experiences, such as the appropriate way to treat a hypoglycemic episode that worked for them or another family member in the past or how they used the plate method to help balance their breakfast meal which they used to omit. By allowing others to share and educate one another on their own experiences, skills, and current knowledge of diabetes, the conversation map empowered the participants and created an environment of experiential learning. All of these could be reasons for significant attitude improvements in the conversation map group. One research study described experiential learning as a point in learning where the power relations between patient and health professional are challenged when patients also develop relevant knowledge. By being together in their learning environment, the patients transformed their once passive role into an active leadership role (69). In this research we observed that during experiential learning, participants were empowered to take on roles of both teacher and learner interchangeably during the education session. This was such a significant experience for them, which may have triggered their desire to achieve more behavioral changes. Participants in the conversation map group shared their experiences, knowledge, attitudes, and skills and discussed best practices for completing tasks. This theme relates to the social learning theory. The interaction with other participants becomes part of the learning, and knowledge is shared in the form of experience.
Conversation Map Theme 2: Self-Directed Approach to Learning

Participants who attended the conversation map education intervention felt that the educational topics focused on during the education were driven by their desire to learn more about these topics. Extra time was spent discussing specific beliefs, situations that applied to participants’ lives, as well as addressing questions specific to their own diabetes self-care. The approach to learning was directed by the participants in this education group. The conversation provoked discussion around beliefs, perceived susceptibility and severity, and uncovered benefits and costs associated with individual diabetes self-management, all of which are the underlying keys to the theories of the health belief and common sense models (39).

Conversation Map Theme 3: An Attitude of Feeling Socially Supported

In the conversation map group, another theme that emerged was group cohesiveness and feeling socially supported. Participants identified the ability to relate to one another and empathize with stories they had shared. One participant described ‘feeling that you are not alone’, implying that the education intervention provided a group equality where participants felt like allies bonded together by their diabetes.

The conversation map method provided participants with opportunities to discover more about their attitudes toward diabetes. Perhaps this is another reason for the improved attitude scores in the conversation map group. The conversation map method seemed to create an environment where participants could ‘safely’ think about current their behaviours and analyze their level of motivation for change. Participants were able
to actively evaluate their own readiness for change, a step that is part of the stages of change model (33), with others actively supporting them on this journey, an application of Bandura’s social cognitive theory (42).

**Conversation Map Theme 4: Visualization of Specific Diabetes Management Needs**

Visualizing specific topics of diabetes self-management is quite unique, as it is not a common theme found in other research. Using the conversation map method, participants described the tool as taking on a ‘road map’ effect during the education session. The map acted as a point of reference presented visually to the participants. At any point during the education session, participants felt comfortable jumping from one topic to another, and if needed, returned to a topic to answer additional questions. The map engaged participants to ask questions about topics of diabetes self-care by providing images of the topics. For example, an image of a healthy plate was presented to encourage discussion around balanced eating. Another example was goal setting, represented as a bicycle built for more than just one person. This reinforces that at most times, it takes the assistance of others around you to set and meet your goals. One participant did make a comment that could be interpreted in a negative way about the map seeming childish with pictures and images. However, the participant went on to clarify that this seems to be a positive strategy and it works because it is a less intimidating way of presenting diabetes management. No other literature could be found on conversation maps that parallel this emerging theme of visualization of specific topics. Further qualitative research on conversation maps is needed in this area.
5.5.3 Traditional Education Theme

In the traditional education group, a theme of low group interaction was uncovered. Perhaps the reason that fewer themes were identified was a resulting phenomenon of low group participation. The theme is perceived as a barrier in DSME and is discussed in this section.

Traditional Method Theme 1: Low Group Participation

A theme that emerged only in the traditional education method was low group participation. One participant stated that to ‘open up’ there needs to be a level of comfort in a group. With low group participation, there may have been a lower comfort level in sharing information. If there was not enough trust created between the educator and the participants, perhaps participants did not feel comfortable to ask questions or share stories during the education session. Perhaps they did not have the same visual stimulation reported in the conversation map group. Patient autonomy scores were not significantly different between the two methods of education, so it can be presumed that participants did acknowledge responsibility for their diabetes self-care. However, the traditional education method did not significantly improve other subscales of patients’ attitude toward diabetes. This negative perception of low group interaction in the traditional education group likely influenced participants’ attitudes toward managing their diabetes. There is a need for further research to evaluate if the negative perceptions played a role in setting less goals and making fewer behavioural changes.
5.6 LIMITATIONS OF THE STUDY

A limitation of this study was the low sample size of participants. Perhaps using a larger sample size of participants may provide more insight into patients’ perceptions of different DSME methods. Additionally, running focus groups both at short term (after 3 to 6 months) and long term (after 12 to 14 months) intervals may provide additional information on patients’ wants and needs in a DSME program.

Not controlling for pharmacological treatment changes is an additional limitation of this study. Other research findings support that the presence of oral agent therapy was a significant predictor of Hb A1c improvement independent of education settings (51). In future research, educators should document any potential confounding variables that could affect changes in Hb A1c concentrations such as medication changes. Another limitation of this study was only measuring Hb A1c three months after education interventions. If participants waited a period of time to set goals and make behaviour changes, the outcomes of the changes would not be observed fully in only one HbA1c reading as it would measure average blood glucose concentration for the previous three months. For example, if participants did not set and achieve behaviour goals to improve glycemic control until the study neared completion, only a few days of improved glycemic control would have contributed to the overall average Hb A1c reading. If they continued with these goals, measuring Hb A1c concentrations at six months may show more significant improvements in Hb A1c outcomes. In future research, it is recommended to compare repeated Hb A1c tests at three, six, and twelve to fourteen
months as other researchers have done in their studies (50, 67). This timeline is not realistic to follow in the present study.

Finally, the short-term attitude improvements demonstrated in this study may not be sustained long term. Other studies have suggested that longer term behaviour change may require longer term interventions (70–72). Further research is required to evaluate the effects of conversation maps on the long term knowledge, attitude, and behaviour outcomes.

With most research studies, there is a possibility that the study may not truly represent the adult population with type 2 diabetes in a community. In general, people who volunteer to take part in research studies tend to be motivated and committed (49). Having motivated participants did not affect the results of the present study as both groups of participants were part of the same motivated subgroup; however, it may affect the generalisability of the results. Because all participants in present study were able to read, write and speak English, the results may only be applicable to other populations with similar characteristics.

5.7 VALUE OF CONVERSATION MAPS IN DSME

As shown in this study, the intrinsic value of conversation maps lies in its ability to create an environment for experiential learning, self-directed learning, and social support which are associated with improved attitudes toward type 2 diabetes mellitus. The conversation map DSME method has elements of different theoretical frameworks built into the learning process which support adult learning. Participants from the conversation maps group shared and compared their knowledge, skills and experience in
self-management and self-care behaviours. The value and reward of self-management, such as improved glycemic control that was illustrated in this study, supports the social learning theory. Another model that the conversation map supports is the Health Belief Model. This model suggests discussion around perceived barriers, benefits, self-direction, and cues to action should be done. The conversation map seems to support this adult learning theory by exploring participants’ feelings, perceptions, attitudes, and beliefs related to diabetes and its self-management. Another model that is supported by the conversation map DSME method is the trans-theoretical model of change whereby behaviour change is identified by stages of readiness for change and the learner’s ability to change, act, evaluate, and react. Conversation Maps supports the stages of change by helping participants recognize the need for change, enabling personal strategies for adopting change, and providing an action plan for implementing change. Many educational interventions in diabetes lack reported theoretical frameworks in their development (73). Considering the theoretical underpinnings of conversation maps, this research suggests that the conversation map tool improves patient attitude and perceptions of education because it follows principles of adult learning. Using conversation maps encourages behaviour change by improving the chances of providing meaningful education that may lead to sustained improvement in outcomes, such as glycemic control, for people with diabetes.
CHAPTER 6
RELEVANCE AND IMPLICATIONS FOR PRACTICE

This chapter discusses the relevance of evaluating DSME strategies such as conversation maps and includes opportunities for further research on the use, effectiveness and efficiency of this new method.

6.1 RELEVANCE AND IMPLICATIONS

Although group education is supported in the literature to have a significant impact on improving Hb A1c levels, diabetes knowledge, and attitudes toward diabetes, many diabetes education centres continue to use traditional methods of education which involve a more didactic teacher/learner approach, whereby the educator lectures about DSME rather than facilitates the learning process. This is slowly changing as more research is conducted on education programs that work toward promoting attitude and behavioural changes.

In the present study, we observed that different diabetes education methods can affect outcomes in participants’ attitudes toward diabetes. This study also shows that there is a need for further research on the use of conversation maps as an effective and efficient group education method. There is also a need to develop evidence-based best practices to guide diabetes group education. Participants who received education through conversation maps showed improved attitude scores on four out of five subscales after education was received. Although we did not use a structured instrument to measure diabetes self management changes in behaviour, we asked participants in focus groups about the changes they had made to their diabetes management. Participants in both the
conversation map and traditional education method focus groups made at least one behaviour change since attending the education sessions. However, the conversation map focus group participants reported more than one self-reported behaviour change. Using education tools that support principles of adult learning, such as conversation maps, may lead to greater behavioural change and more control of their type 2 diabetes.

Group education is equally as effective as individual education at improving patient knowledge, therefore many standards recommend group education both nationally and internationally (39). In the current economy where health care costs are escalating and individuals with type 2 diabetes mellitus are increasing, providing group education is more financially viable.

Providing group education more often where applicable rather than individual education would save the time and resources of health care providers, especially if this education is provided on a longer term basis. Long term diabetes self-management improvements would help reduce the financial burden associated with the long-term costs of chronic diabetes complications. There remains little research that compares different delivery methods of group education and the qualitative research that examines patient perceptions of group education is limited.

In comparing the impact of different methods of delivering DSME, the present study was able to uncover that both forms of diabetes group education had positive impacts on improving patients’ KAB. Both DSME methods were associated with improving Hb A1c levels after three months, although we cannot conclude that improved Hb A1c levels were direct results of the diabetes education alone. When conducting between group analyses, the conversation map method had a greater impact than the
traditional method of education on improving attitudes toward the need for special
training, the seriousness of diabetes, the value of blood glucose control, and the
psychosocial impact of diabetes three months after education was received. The present
study highlights the importance of evaluating the effects of different DSME delivery
methods on patient’s KAB as well as gathering qualitative data on patient perceptions of
DSME as these measurements can provide important data that may support future DSME
program development. This research also articulates the importance of including adult
learning principles and theoretical models in DSME program. Examining the long-term
impact of the conversation map on knowledge, attitude, and behaviour changes as well as
clinical outcomes such as Hb A1c is highly recommended for future research.
REFERENCES


APPENDICES
EVALUATING THE IMPACT OF TWO DIFFERENT FORMS OF DIABETES SELF-MANAGEMENT EDUCATION ON KNOWLEDGE, ATTITUDE AND BEHAVIOURS OF PATIENTS WITH TYPE 2 DIABETES MELLITUS

Researchers from Brescia University College and the University of Western Ontario in collaboration with Diabetes Care Guelph are completing a research study evaluating the impact of the delivery method of diabetes education.

You are invited to participate in this research which examines the effectiveness of two different methods of diabetes self-management group education, conversation maps and a traditional group education approach. In this study, we will examine the changes in patients’ knowledge, attitudes and behaviours after receiving one of the different education methods.

If you would like to be in the study, and can answer YES to the following questions, we would like to hear from YOU!

1. You are between the ages of 19 and 65 years of age.
2. You have received a diagnosis of type 2 diabetes mellitus within the last five years.
3. You are able to read, write, and speak the English language.
4. You have the equivalent to an eighth grade education or higher.

For more information, or to enroll in this study, please inquire at:

Diabetes Care Guelph
Telephone: 519-840-1964
Appendix B. Letter of Information

Letter of Information

Title of Research Study: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

Researchers:
Dr. Alicia Garcia, PhD, RD, CFE, Director, Professor in Foods and Nutrition
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Brescia University College, UWO

Collaborators:
Sam Marzouk, MD, MBA
Candice Duguay, BScN, RN
Sarah Micks, BScN, RN

83 Dawson Road
Guelph, ON N1H 1B1
Diabetes Care Guelph

Purpose of the Study: You are invited to participate in a research study examining the effectiveness of two different methods of diabetes self-management group education, conversation maps and a traditional group education approach. Conversation maps are a series of images and symbols on a tabletop display that serve as a tool to engage people in conversations about diabetes in order to facilitate learning within a group setting. Diabetes conversation maps include all appropriate self-management topics required in a diabetes education program. The traditional diabetes education is a series of lectures provided by a nurse and a dietitian with the assistance of a PowerPoint presentation. The difference between diabetes conversation maps compared to traditional diabetes education is the delivery method. In this study, we will examine the changes in patients’ knowledge, attitudes and behaviours after receiving one of two different education methods.
Objectives of the Study:
1. To determine self-management knowledge, attitudes and behaviours of patients with type 2 diabetes mellitus before and after diabetes education intervention.
2. To evaluate the impact of conversation maps on knowledge, attitudes and behaviours.
3. To evaluate the impact of traditional group education on knowledge, attitudes and behaviours.
4. To compare patients’ knowledge, attitudes and behaviours after receiving diabetes self-management education through conversation maps versus traditional group education.
5. To determine patients’ perceptions of diabetes self-management education using conversation maps compared to traditional group education.

Your Participation: If you agree to participate in this study, you will randomly assigned to one of two groups using a blocked design for randomization. One group will receive diabetes self-management education utilizing conversation maps. The other group will receive diabetes self-management education using a more traditional group education approach. Each group will receive the same educational topics in accordance with the Canadian Diabetes Association Clinical Practice Guidelines 2008. After being assigned into an educational intervention, you will receive two, 2-hour educational sessions approximately 2 weeks apart. Participants will be asked to complete a 20-item knowledge questionnaire and a 33-item attitudes and behaviours questionnaire prior to the first educational session. The questionnaires will take 20-25 minutes of your time. After the second education session, you will be asked to complete two questionnaires that will take 20-25 minutes of your time. As part of data analysis, your routine HbA1C values will be included in the research. Some of you from each intervention group may be asked to participate in a focus group approximately three months after the initial educational session is received. If asked to participate in a focus group session, the session will take approximately an hour of your time. If you choose not to participate in this study, you will receive diabetes self-management education as per current clinic protocol. Your decision will not affect the education or care you receive from Diabetes Care Guelph.

Your Rights: Your participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your current involvement with Diabetes Care Guelph. You are encouraged to answer the questions as completely as possible. All information provided is strictly confidential and will be compiled in a such a way that individual responses cannot be indentified. You can withdraw from the study at any time; however, because diabetes self-management education is part of regular clinic treatment, at Diabetes Care Guelph, your withdrawal from this study will be recorded by Diabetes Care Guelph.

Confidentiality: Your research records will be stored in a locked cabinet in a secure office and will be destroyed after 5 years. The questionnaires completed by participants will be coded to ensure all participants remain anonymous. The researchers involved in this study will be the only people to view the questionnaires that you complete. If the
results of this study are published, your name will not be used and no information that discloses your identity will be released or published.

**Risks/Benefits:** There are no known risks associated with this research. Receiving diabetes self-management education will be the only direct benefit to you. Your participation may help the researchers gain new knowledge that may benefit how diabetes education is provided in the future.

There will be approximately 140 participants (70 per intervention group) recruited through a convenience sample from Diabetes Care Guelph patients and within the Guelph community.

If you agree to participate in this study and sign the consent form, you will be notified of the dates of your education sessions as well as whether you’ve been selected to participate in a focus group in approximately 3-4 weeks from today. You do not waive any legal rights by signing the consent form.

**For More Information:**

1. Contact Laura Briden at tel: (519) 400-0302; e-mail: lbriden2@uwo.ca mail: Division of Food and Nutritional Sciences, Brescia University College UWO, 1285 Western Road, London, ON N6G 1H2
2. If you have any questions about your rights as a research participant or the conduct of this study you may contact the Office of Research and Ethics at (519) 661-3036.

Thank you in advance considering to participate in this research study. Your participation may help researchers better understand patient perceptions of diabetes self-management education methods.

**This letter is yours to keep.**
Appendix C. Screening Questionnaire

**Screening Questionnaire**

**Title of Research Study:** Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

Circle “Yes” or “No” for all of the following that apply to you:

1. You are between the ages of 19 and 65 years of age.  YES  NO

2. You have received a diagnosis of type 2 diabetes mellitus by a license practicing physician (doctor) within the last five years.  YES  NO

3. You have received a form of diabetes education from a diabetes education centre prior to this study.  YES  NO

4. You are able to read, write, and speak the English language.  YES  NO

5. You have the equivalent to an eighth grade education or higher.  YES  NO

6. You have been diagnosed with a mental or psychosocial condition (i.e. schizophrenia, bi-polar disorder, clinical depression).  YES  NO

7. You are able to provide written informed consent today to participate in this research.  YES  NO
Appendix D. Consent Form

Consent Form

Title of Research Study: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

________________________________________
Patient’s Printed Name

________________________________________
Patient’s Signature

Date

________________________________________
Printed Name of Person Obtaining Consent

________________________________________
Signature of Person Obtaining Consent

Date

☐ Please place a √ in the box provided if you wish to receive information about the overall results of the study.
Appendix E. Demographic Questionnaire

CLIENT CODE: ______________________
Pretest □
Posttest 1 □
Posttest 2 □

Demographic Questionnaire

Study Title: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

1. In what year were you born? ______________________

2. Are you male or female?
   □ Male   □ Female

3. When were you diagnosed with Type 2 Diabetes Mellitus?
   ______________________

4. What language do you speak in your household?
   □ English
   □ French
   □ Other (Please list): ________________

5. What is your marital status?
   □ Married   □ Separated
   □ Divorced   □ Single (never married)
   □ Common law relationship   □ Widowed

6. What is the highest level of education that you have completed?
   □ Elementary school   □ University undergraduate degree
   □ Some high school   □ University graduate degree
   □ Finished high school
   □ Trade school/college diploma
Appendix F. Coded Knowledge Questionnaire

CLIENT CODE: ____________

Pretest  ☐
Posttest 1 ☐
Posttest 2 ☐

Knowledge Questionnaire

1. The diabetes diet is:
   a. the way most people eat
   *b. a healthy diet for most people
   c. too high in carbohydrate for most people
   d. too high in protein for most people

2. Which of the following is highest in carbohydrate?
   a. Baked chicken
   b. Swiss cheese
   *c. Baked potato
   d. Peanut butter

3. Which of the following is highest in fat?
   *a. Low fat milk
   b. Orange juice
   c. Corn
   d. Honey

4. Which of the following is a “free food”, meaning is contains little to no available carbohydrate?
   a. Any unsweetened food
   b. Any dietetic food
   c. Any food that says “sugar free” on the label
   *d. Leafy green vegetables

5. Glycosylated hemoglobin (hemoglobin A1c) is a test that is a measure of your average blood glucose level for the past:
   a. day
   b. week
   *c. 3 months

6. Which is the best method for testing blood glucose?
   a. Urine testing
   *b. Blood testing
   c. Both are equally good

7. What effect does unsweetened fruit juice have on blood glucose?
   a. Lowers it
   *b. Raises it
   c. Has no effect

8. Which should not be used to treat low blood glucose?
   a. 5 hard candies
   b. 3/4 cup orange juice
   *c. 1 cup diet soft drink
   d. 1 tbsp of honey

9. For a person in good control, what effect does exercise have on blood glucose?
   *a. Lowers it
   b. Raises it
   c. Has no effect
10. Infection is likely to cause:
*a. an increase in blood glucose
b. a decrease in blood glucose
c. no change in blood glucose

11. The best way to take care of your feet is to:
*a. look at and wash them each day
b. massage them with alcohol each day
c. soak them for one hour each day
d. buy shoes a size larger than usual

12. Eating foods lower in fat decreases your risk for:
a. nerve disease
b. kidney disease
*c. heart disease
d. eye disease

13. Numbness and tingling may be symptoms of:
a. kidney disease
*b. nerve disease
c. eye disease
d. liver disease

14. Which of the following is usually not associated with diabetes:
a. vision problems
b. kidney problems
c. nerve problems
*d. lung problems

15. Signs of low blood glucose include:
a. shakiness
b. sweating
c. hunger
*d. all of the above

16. If you are sick with the flu, which of the following changes should you make?
a. Take less medications
b. Drink less liquids
c. Eat more proteins
*d. Test for glucose more often

17. If you are beginning to experience a low blood glucose, you should:
a. exercise
b. lie down and rest
*c. drink some juice
d. take insulin

18. Low blood glucose may be caused by:
*a. vigorous exercise
b. too little insulin
c. too much food
d. too little exercise

19. High blood glucose may most likely be caused by:
*a. eating a meal high in carbohydrates
b. skipping meals
c. delaying your snack
d. large ketones in your urine

20. Which one of the following will most likely cause an insulin reaction:
*a. heavy exercise
b. infection
c. overeating
d. not taking your insulin

* Correct Answer

ADAPTED FROM: Diabetes Knowledge test; Diabetes Research and Training Center © University of Michigan, 1998
Appendix G. Attitudes Questionnaire

CLIENT CODE: ____________________________________________

Pretest □

Posttest 1 □

Posttest 2 □

Attitudes Questionnaire

Below are some statements about diabetes. Each numbered statement finishes the sentence “In general, I believe that...” You may believe that a statement is true for one person but not for another person or may be true one time but not be true another time. Mark the answer that you believe is true most of the time or is true for most people. Place a √ in the box below the word or phrase that is closest to your opinion about each statement. It is important that you answer every statement.

Note: The term “health care professionals” in this survey refers to doctors, nurses, and dietitians.

<table>
<thead>
<tr>
<th>In general, I believe that:</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>1. ...health care professionals who treat people with diabetes should be trained to communicate well with their patients.</td>
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<td>2. ...people who do not need to take insulin to treat their diabetes have a pretty mild disease.</td>
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<td>3. ...there is not much use in trying to have good blood sugar control because the complications of diabetes will happen anyway.</td>
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<td>4. ...diabetes affects almost every part of a diabetic person’s life.</td>
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<td>5. ...the important decisions regarding daily diabetes care should be made by the person with diabetes.</td>
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<td>6. ...health care professionals should be taught how daily diabetes care affects patients’ lives.</td>
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<td>7. ...older people with Type 2 diabetes do not usually get complications.</td>
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<td>8. ...keeping the blood sugar close to normal can help to prevent the complications of diabetes.</td>
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<td>9. ...health care professionals should help patients make informed choices about their care plans.</td>
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<td>10. ...it is important for the nurses and dietitians who teach people with diabetes to learn counseling skills.</td>
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<td>11. ...people whose diabetes is treated by just a diet do not have to worry about getting many long-term complications.</td>
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<td>12. ...almost everyone with diabetes should do whatever it takes to keep their blood sugar close to normal.</td>
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<td>13. ...the emotional effects of diabetes are pretty small.</td>
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<td>14. ...people with diabetes should have the final say in setting their blood glucose goals.</td>
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<td>15. ...blood sugar testing is not needed for people with Type 2 diabetes.</td>
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<td>16. ...low blood sugar reactions make tight control too risky for most people.</td>
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<td>17. ...health care professionals should learn how to set goals with patients, not just tell them what to do.</td>
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<td>18. ...diabetes is hard because you never get a break from it.</td>
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<td>19. ...the person with diabetes is the most important member of the diabetes care team.</td>
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<td>20. ...to do a good job, diabetes educators should learn a lot about being teachers.</td>
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<td>21. ...Type 2 diabetes is a very serious disease.</td>
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<td>22. ...having diabetes changes a person’s outlook on life.</td>
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<td>23. ...people who have Type 2 diabetes will probably not get much payoff from tight control of their blood sugars.</td>
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<td>24. ...people with diabetes should learn a lot about the disease so that they can be in charge of their own diabetes care.</td>
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<td>25. ...Type 2 is as serious as Type 1 diabetes.</td>
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<td>26. ...tight control of blood glucose levels is too much work.</td>
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</tr>
<tr>
<td>27. ...what the patient does has more effect on the outcome of diabetes care than anything a health professional does.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>28. ...tight control of blood sugar makes sense only for people with Type 1 diabetes.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>29. ...it is frustrating for people with diabetes to take care of their disease.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>30. ...people with diabetes have a right to decide how hard they will work to control their blood sugar.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31. ...people who take diabetes pills should be as concerned about their blood sugar as people who take insulin.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>32. ...people with diabetes have the right not to take good care of their diabetes.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>33. ...support from family and friends is important in dealing with diabetes.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
## Appendix H. Diabetes Attitude Questionnaire Formulae

<table>
<thead>
<tr>
<th>Scale Name</th>
<th>Equation</th>
<th>Special Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for Special Training</td>
<td>$\sum (Q1, Q6, Q10, Q17, Q20) / \text{Number of non-missing item}$</td>
<td></td>
</tr>
<tr>
<td>Seriousness of Type 2 Diabetes Mellitus</td>
<td>$\sum (Q2, Q7, Q11, Q15, Q21, Q25, Q31) / \text{Number of non-missing items}$</td>
<td>Reverse scores for Q2, Q7, Q11, and Q15</td>
</tr>
<tr>
<td>Value of Good Control</td>
<td>$\sum (Q3, Q8, Q12, Q16, Q23, Q26, Q28) / \text{Number of non-missing items}$</td>
<td>Reverse scores for Q3, Q16, Q23, Q26, and Q28</td>
</tr>
<tr>
<td>Psychosocial Impact</td>
<td>$\sum (Q4, Q13, Q18, Q22, Q29, Q33) / \text{Number of non-missing items}$</td>
<td>Reverse scores for Q13</td>
</tr>
<tr>
<td>Patient Autonomy</td>
<td>$\sum (Q5, Q9, Q14, Q19, Q24, Q27, Q30, Q32) / \text{Number of non-missing item}$</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Strongly Agree = 5, Agree=4, Neutral = 3, Disagree=2 and Strongly Disagree=1.

**Note:** If 50% of the items of a scale are missing, the scale should be considered as missing.
Appendix I. Focus Group Letter of Information

Focus Group Letter of Information

Title of Research Study: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

Purpose: You are invited to participate in a focus group as part of a research study examining the effectiveness of two different methods of diabetes self-management group education: conversation maps and a traditional group education approach. The purpose of running focus groups is to help us understand your experience and perceptions about the delivery method of diabetes self-management education either with conversation maps or traditional group education. Conversation maps are a series of images and symbols on a tabletop display that serve as a tool to engage people in conversations about diabetes in order to facilitate learning within a group setting. Diabetes conversation maps include all appropriate self-management topics required in a diabetes education program. The traditional diabetes education is a series of lectures provided by a nurse and a dietitian with the assistance of a PowerPoint presentation. The difference between diabetes conversation maps compared to traditional diabetes education is the delivery method.

Objective of conducting Focus Groups:
To determine patients’ perceptions of diabetes self-management education they receive using either a conversation map or traditional group education.

Your Participation: The focus group session will take approximately one hour of your time. During this hour, you will be asked questions to stimulate discussion by a trained focus group facilitator. The facilitator will be following a focus group interview guide with pre-generated questions assembled by the research team regarding your experience with the education sessions you attended. Each focus group session will be recorded on audiotape.

If you choose not to participate in the focus group this study, this will not affect the education or care you receive from Diabetes Care Guelph.

Your Rights: Your participation in the focus group is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the focus group at any time with no effect on your current involvement with Diabetes Care Guelph. All information provided is strictly confidential and will be compiled in such a way that individual responses cannot be identified.

Participant Initials _____
Confidentiality: Your audiotape records will be stored in a locked cabinet in a secure office and will be erased after 5 years. The researchers involved in this study will be the only people to hear or view the discussions from your focus group. Focus group members are asked to keep everything that they hear confidential and not to discuss it outside of the meeting. However, we cannot guarantee that confidentiality will be maintained by group members. If the results of this study are published, your name will not be used and no information that discloses your identity will be released or published.

Risks/Benefits: There are no known risks associated with participating in the focus group. Your participation may help the researchers gain new knowledge that may benefit how diabetes education is provided in the future.

There will be approximately 12-16 participants (6-8 per intervention focus group) randomly selected to participate in the focus groups.

If you agree to participate in a focus group and sign the consent form, you will be notified of the date of your focus group in approximately 2-3 weeks from today. You do not waive any legal rights by signing the consent form.

For More Information:
1. Contact Laura Briden at tel: (519) 400-0302; e-mail: lbriden2@uwo.ca mail: Division of Food and Nutritional Sciences, Brescia University College UWO, 1285 Western Road, London, ON N6G 1H2
2. If you have any questions about your rights as a research participant or the conduct of this study you may contact the Office of Research and Ethics at (519) 661-3036.

Thank you in advance for considering to participate in this research study. Your participation may help researchers better understand patient perceptions of diabetes self-management education methods.

This letter is yours to keep.
Appendix J. Focus Group Consent Form

Focus Group Consent Form

Title of Research Study: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

I have read the letter of information, have had the nature of the focus group explained to me and I agree to participate. All questions have been answered to my satisfaction.

________________________________________
Patient’s Printed Name

________________________________________
Patient’s Signature

________________________________________
Printed Name of Person Obtaining Consent

________________________________________
Signature of Person Obtaining Consent

Please place a √ in the box provided if you wish to receive information about the overall results of the study.
Focus Group Interview Guide

**Study Title:** Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with type 2 diabetes mellitus

**Introduction:** Thank you for coming today to share with us your perceptions about the delivery method of diabetes self-management education. In this interview, we will ask you for your opinions about the style by which diabetes self-management education information was delivered and how the delivery method impacted your knowledge, attitude, and behaviours regarding type 2 diabetes mellitus. Each person will have a chance to talk. Your input is very valuable in helping us better understand the appropriateness of the type of education delivery method you received, as well as to answer the research question: Does the method of diabetes self-management education impact patients’ knowledge, attitudes, and behaviours? Please help yourself to refreshments at any time.

Do you have any questions before we get started?

**A. Discussion Guidelines**

We would like the discussion to be informal, so there’s no need to wait for us to call on you to respond. In fact, we encourage you to respond directly to the comments other people make. If you don’t understand a question, please let us know. We are here to ask questions, listen, and make sure everyone has a chance to share their opinion.

We may interrupt you from time to time and if you aren’t saying much, we may call on you to share your views. This is a way of making sure that everyone’s perspective and opinion is included. If you are asked a question and do not feel comfortable sharing a response, please feel free to say so.

We do ask that we all keep each other’s identities, participation and remarks private. We hope you’ll feel free to speak openly about your views.

As discussed, we will be tape recording the discussion, because we don’t want to miss any of your comments. No one outside of this room will have access to these tapes and they will be destroyed after our report is written.

(If assistants present) Helping are my assistants _____ and _______. They will be taking notes and be here to assist me if I need any help.
B. Icebreaker introductions

Let’s begin. Let’s find out some more about each other by going around the room one at a time. Tell us your name and something interesting about you.

C. Questions

We would like to know your opinions about your group education experience and how the delivery method was helpful or not helpful for you in increasing your diabetes knowledge, changing attitudes or improving your diabetes self-management behaviours.

1. How did the delivery method of conversation map or traditional education help/not help you in increasing your diabetes knowledge?

   **Probe:**
   Was it easy or difficult to comprehend the information about how diabetes works?

   Was it easy or difficult to comprehend the information about risk factors and complications associated with diabetes?

   Was it easy or difficult to comprehend the information about medication management?

   Was it easy or difficult to comprehend the information about lifestyle changes to assist with diabetes management?

2. How did the delivery method help/not help you in changing your attitude toward diabetes?

   **Probe:**
   How did group interaction affect/not affect your attitude toward diabetes?

3. How did the delivery method help/not help you in changing your diabetes self-management behaviours?

   **Probe:**
   How did the education sessions affect your ability to identify diabetes self-management behaviours?
   a. Diet and nutrition (e.g., food choices, portion control)
   b. Exercise/physical activity level
   c. Your attitude toward the ability to self-manage your diabetes

4. Please tell us how you found the education delivery method in terms of the following:
   a. Did you find the length of each education session to be too long/too short?
   b. Was there too little/too much group interaction?
5. What are some of the changes you have made in the day-to-day management of your diabetes?

**To Member Check:**
Facilitator will provide an oral summary of the focus group themes and then ask: Is this an adequate summary of what we discussed today? Once participants have given their feedback on this, move to closing.

**Closing:** Thank you so much for your participation today. Before you leave, we have a brief demographic questionnaire that we would like you to complete. Also, as a token of our appreciation for your time and participation in the study, we will give each one a $10 gift card for your local grocery store.
Appendix L. Conceptual Framework

VISIT 1

Convenience Sample of participants

Participants randomized to conversation map intervention

Participants randomized to traditional group education intervention

VISIT 2

Pre-test conducted on KA before receiving education intervention.

Participants attend Conversation Map education (2 hours duration)

Compare Pretest KA scores and baseline A1C

Pre-test conducted on KA before receiving education intervention.

Participants attend traditional group education (2 hours duration)

VISIT 3

2 weeks after initial intervention, participants attend a second education intervention with conversation maps.

Post-test 1 conducted on KA directly following second intervention

Compare Posttest-1 KA scores

2 weeks after initial intervention, participants attend a second traditional group education intervention.

Post-test 1 conducted on KA directly following second intervention

VISIT 4

Post-test 2 conducted on KA 3 months after second intervention

Compare Posttest-2 KA scores and A1C

VISIT 5

Subgroup of participants (n=6-8) to attend focus group

Compare perceptions of education interventions

Subgroup of participants (n=6-8) to attend focus group
Appendix M. Image of the Conversation Map Provided by Diabetes Care Guelph
Step 1:

Diabetes Basics

What is Diabetes?

Diabetes is a disorder characterized by the presence of high blood sugar due to defective insulin secretion, action or both.
Types of Diabetes

**Type 1**
- Usually young children
- No insulin production
- Treatment is Insulin

**Type 2**
- Usually adults
- Obesity or abdominal overweight
- Treatment varies
### Diabetes – Risk Factors

<table>
<thead>
<tr>
<th>Uncontrollable</th>
<th>Controllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Family History</td>
<td>• Smoking</td>
</tr>
<tr>
<td>• Over age 40</td>
<td>• Weight</td>
</tr>
<tr>
<td></td>
<td>• Exercise</td>
</tr>
<tr>
<td></td>
<td>• Annual check-ups</td>
</tr>
<tr>
<td></td>
<td>• Healthy, well balanced meals</td>
</tr>
</tbody>
</table>

### Hyperglycemia

- **Feeling Unwell**
- **Feeling Tired**
- **Passing More Urine**
- **Thirst**
How To Treat Symptoms

- Check Sugar
- ¾ cup (175ml) of Orange Juice or Regular pop
- 6 Lifesavers
- 1 Tbsp honey
- 5 hard candies
- Re-check blood sugar after 15min. If still low – treat again
- Eat snack/meal

Diabetes is Progressive

Be aware of the long-term affects of high blood sugar!!!

Complications:
Taking Control!!

Self Management Skills...

- Meals
- Monitor
- Movement
- Medications

Monitors

How do I get one?

- Purchase from pharmacy
- Prescription from Doctor
- Promotions through pharmacy – Buy strips get meter free
- Drug Plans
Blood Sugar Monitoring

Based On:

- The individual
- Type of diabetes
- Current treatment
- Need for information about blood sugars

Target Blood Sugar Values

<table>
<thead>
<tr>
<th>Fasting Blood Sugar Value</th>
<th>2 Hours After Meals</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 – 7 mmol/L</td>
<td>5 – 10 mmol/L</td>
</tr>
<tr>
<td></td>
<td>5 – 8 mmol/L (tighter control)</td>
</tr>
</tbody>
</table>
Lab Tests

**HbA1C**
- Every 3 – 6 months

**Lipid Profile**
- Annually

**Kidney Function**
- Annually and/or as necessary

**Liver Function**
- Annually and/or as necessary

Screening

**It is also recommended:**

Eye Exams – annually

Dental check up/cleaning – every 6-9 months

Footcare – weekly inspection and toenail care; annually by healthcare provider
Movement

Moderate physical activity of 150min/wk
5-7 % weight loss (about 15 pounds)

- Reduces blood sugars
- Reduces insulin resistance
- Reduces risk of heart disease
- Improves cholesterol
- Weight loss

Stress and Coping

Stress hormones affect your blood sugar levels!!

- Identify your stress
- Accept what is beyond your control
- Recognize what you can control
HEALTHY EATING FOR DIABETES MANAGEMENT

Planning Meals & Snacks
Meal Timing is Key

Food Energy Connection

Blood Sugar

Insulin

Tired, Hungry, Cranky, Cravings

Nothing  Bagel  Candy  Big Dinner  Cookies

8 am  11 am  3 pm  7 pm  10 pm
Space Meals 4 to 6 Hours Apart

Frequent small meals and snacks

Blood Sugar

Happy, Energized
Good food choices

<table>
<thead>
<tr>
<th>Breakfast Snack</th>
<th>Lunch</th>
<th>Snack</th>
<th>Small Dinner</th>
<th>Snack</th>
</tr>
</thead>
<tbody>
<tr>
<td>7am</td>
<td>10am</td>
<td>12 pm</td>
<td>3pm</td>
<td>6pm</td>
</tr>
</tbody>
</table>

What are Carbohydrates?

CARBOHYDRATES = SUGAR = ENERGY = FUEL

Forms of Carbohydrates:

1. Sugars
2. Starches
Where are Carbohydrates Found?

- Grains and Starches (including corn, potatoes)
- Fruits and fruit juice
- Sweet Vegetables (peas, parsnips, squash)
- Milk and Alternatives
- Sweet Foods and Snacks

Balanced Meals

Consistent amounts of carbohydrate foods at meals and snacks
### Balanced Snacks

<table>
<thead>
<tr>
<th>CARBOHYDRATE SOURCES</th>
<th>PROTEIN SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh fruit (1 medium apple)</td>
<td>Low-fat cheese (1oz) (&lt;20%MF)</td>
</tr>
<tr>
<td>Whole-grain crackers (4-6)</td>
<td>Tuna (¼ cup)</td>
</tr>
<tr>
<td>Low fat yogurt (¼ cup) (artificially sweetened)</td>
<td>Almonds (8-10)</td>
</tr>
<tr>
<td>1 slice whole wheat bread</td>
<td>Peanut butter (1 tbsp)</td>
</tr>
</tbody>
</table>

### Healthy Weight
- Regular exercise
- Healthy eating environment
- Appropriate portions
- Eat fibre-rich foods
- Healthy beverage & snacks
Golden Rules

1. Eat consistent amounts of carbohydrate at meals and snacks.

2. Space meals 4-6 hours apart.

3. Include protein with meals and snacks.

4. No fruit on its own.

5. Limit unhealthy fat intake.

Thank you!

Questions?
Acknowledgements

Dr. Alicia C. Garcia, PhD RD CFE

Collaborators at Diabetes Care Guelph
Agenda

• Background
• Research objectives
• Study design & methodology
• Preliminary results
• Concluding thoughts
• Implications for practice
• Questions

Prevalence of Diabetes

• By 2016, a predicted 3 million Canadians are expected to be living with diabetes

• Current prevalence of diabetes
  ➢ Canada: 6.2%
  ➢ Ontario: 8.8%
  ➢ Guelph: 7%

  based on Guelph FHT random practice searches (EMR software)
Incidence of Diabetes

- 2006-07 newly diagnosed cases of diabetes
  - 211,168 aged 1 year and older
  - Lower rates in children
  - Rising steadily after 45 years, peaking at 70 to 74 years
- Every 10 seconds, 2 people are diagnosed with diabetes in the world (International Diabetes Federation)

Public Health Agency of Canada, Diabetes Surveillance, 2009

Background

Education Goal:
- Patient Self-Management
  - Ability to make independent, informed decisions
- Self-management recommended goals:
  - Glycemic control ($\text{HbA1c} < 7\%$)
  - Blood pressure ($<130/80$)
  - LDL cholesterol ($< 2.00 \text{ mmol/L}$)

Saydah et al. JAMA, 2004; Resnick et al. Diabetes Care, 2006
Background

Domains of learning:
1. Cognitive (abstract, knowledge)
   • Lectures and self-learning manuals
2. Psychomotor (skill)
   • Demonstration and practice
3. Affective (feeling, attitudes, beliefs)
   • Group discussion, brainstorming, and values clarification


Diabetes Care Guelph

Patient Referral (HCP-SELF)
- Phone call - Book appointment - Intro package mailed

Initial Intake (60 min)
- RN/RD-Assess patient needs/ Outline other services (Kin/SW/Endo/FC)

Group Seminars (Conversation Map)
- Living with diabetes/Beyond the Basics/CHO counting/ Energizing fitness

Follow Up Appointments (1:1-Phone-email)
- Patient preference/DCG recommendation
Conversation Maps

- Tool to engage people in conversations in order to facilitate learning
- Opportunity to share experiences with others; Educators act as facilitators

Why Study Conversation Maps?

- A large number of people do not achieve recommended self-management goals
- No research to date that examines the impact of conversation maps on patients in diabetes self-management education
Purpose of Research

• Study the effectiveness of conversation maps compared to traditional methods of group education:
  ➢ Scored Knowledge and Attitude questionnaires
  ➢ Pre-test/post test design
  ➢ Focus groups
    Patient perceptions
    Reported behaviour changes

Definitions

• Conversation Maps
  ➢ Table top display to facilitate learning

• Traditional Education
  ➢ Powerpoint presentation with question and answer period
Research Objectives

Objective 1. To determine self-management knowledge and attitudes of patients with diabetes before and after diabetes education intervention

Objective 2. To evaluate the impact of conversation maps and traditional group education on knowledge and attitudes of patients

Objective 3. To compare patients’ knowledge and attitude scores between groups after receiving education

Objective 4. To compare changes in patients’ glycosylated hemoglobin (HbA1c)

Objective 5. To determine behavior changes and explore patient perceptions using focus groups
Study Design

- Participants randomly assigned to 2 intervention groups

- Pretest/ posttest questionnaire
  - Adapted from Michigan Diabetes Research and Training Center
  - 20-item Knowledge questionnaire (MC)
  - 33-item Attitude questionnaire (Likert scale)

- Focus Groups - 3 months post intervention

Participants

Inclusion
- 19 to 65 years of age
- Diagnosis of type 2 diabetes within previous five years
- No previous diabetes education
- Read, write and speak the English language

Exclusion
- Diagnosed with a mental or psychosocial health condition that is not stable
- Unable to provide written consent
- Have less than an 8th grade education
Methodology

VISIT 1
Convenience Sample of participants recruited

Participants randomized to conversation map intervention
Participants randomized to traditional group education intervention

VISIT 2
Pretest conducted on KAB before receiving education intervention
Participants attend Conversation Map education session 1 (2 hours duration)

Pretest conducted on KAB before receiving education intervention
Participants attend traditional group education session 1 (2 hours duration)

VISIT 3
2 weeks after initial intervention, participants attend a second education intervention with conversation maps
Posttest-1 conducted on KAB directly following second intervention

2 weeks after initial intervention, participants attend a second traditional group education intervention
Posttest-1 conducted on KAB directly following second intervention

VISIT 4
Posttest-2 conducted on KAB 3 months after second intervention

Compare Posttest-2 KAB scores and A1C

VISIT 5
Subgroup of participants (n=6-8) to attend focus group

Compare participant perceptions of education interventions

Subgroup of participants (n=6-8) to attend focus group
Baseline Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Conversation map intervention group</th>
<th>Traditional education intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants: n</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Age</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td></td>
<td>46.8 ± 11.86 (Range)</td>
<td>56.18 ± 6.05 (Range)</td>
</tr>
<tr>
<td></td>
<td>(20 to 64.9)</td>
<td>(47 to 64)</td>
</tr>
<tr>
<td>Language (%)</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Gender (%)</td>
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<td>Male</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>60</td>
</tr>
<tr>
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<td>Female</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Marital Status (%)</td>
<td>Married</td>
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<tr>
<td></td>
<td>50</td>
<td>64</td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
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<td>Single</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Education Level (%)</td>
<td>Finished high school</td>
<td>Finished high school</td>
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<tr>
<td></td>
<td>30</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Trade school/college diploma</td>
<td>Trade school/college diploma</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>University undergraduate degree</td>
<td>University undergraduate degree</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>University graduate degree</td>
<td>University graduate degree</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Duration of diabetes (%)</td>
<td>≤6 months</td>
<td>≤6 months</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>&gt;6 months</td>
<td>&gt;6 months</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>36</td>
</tr>
</tbody>
</table>

Preliminary Results

Mean Knowledge Changes

<table>
<thead>
<tr>
<th></th>
<th>Conversation Map Group</th>
<th>Traditional Method Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test (baseline)</td>
<td>15.2</td>
<td>14.73</td>
</tr>
<tr>
<td>Post test 1</td>
<td>18.1</td>
<td>16.18</td>
</tr>
<tr>
<td>Post test 2</td>
<td>17.9</td>
<td>15.82</td>
</tr>
</tbody>
</table>
Preliminary Results:

Mean Attitude Score
Need for specialized training

- Conversation Map Group
- Traditional Methods Group

<table>
<thead>
<tr>
<th></th>
<th>Pre test (Baseline)</th>
<th>Post test 1</th>
<th>Post test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for training</td>
<td>4.14</td>
<td>4.51</td>
<td>4.74</td>
</tr>
<tr>
<td>Pretest (Baseline)</td>
<td>4.29</td>
<td>4.34</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Preliminary Results:

Mean Attitude Score
Seriousness of Type 2 DM

- Conversation Map Group
- Traditional Method Group

<table>
<thead>
<tr>
<th></th>
<th>Pre Test (Baseline)</th>
<th>Post Test 1</th>
<th>Post Test 2</th>
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<tbody>
<tr>
<td>Seriousness of Type 2 DM</td>
<td>3.84</td>
<td>4.51</td>
<td>4.61</td>
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<tr>
<td>Pre Test (Baseline)</td>
<td>3.92</td>
<td>4.14</td>
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Preliminary Results:

**Mean Attitude Score**

Value of blood glucose control

- **Conversation Map Group**
  - Pre Test (Baseline): 3.97
  - Post Test 1: 4.46
  - Post Test 2: 4.53

- **Traditional Method Group**
  - Pre Test (Baseline): 4.1
  - Post Test 1: 4.17
  - Post Test 2: 4.2

**Psychosocial Impact of DM**

- **Conversation Map Group**
  - Pre Test (Baseline): 3.45
  - Post Test 1: 4.06
  - Post Test 2: 4.33

- **Traditional Method Group**
  - Pre Test (Baseline): 3.97
  - Post Test 1: 4.06
  - Post Test 2: 4.12
Preliminary Results

### Mean Attitude Score

**Patient Autonomy**

<table>
<thead>
<tr>
<th></th>
<th>Conversation Map Group</th>
<th>Traditional Method Group</th>
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</thead>
<tbody>
<tr>
<td>Pre Test (Baseline)</td>
<td>3.59</td>
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</tr>
<tr>
<td>Post Test 1</td>
<td>4.15</td>
<td>3.8</td>
</tr>
<tr>
<td>Post Test 2</td>
<td>4.2</td>
<td>3.82</td>
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### Between group differences

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<tr>
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</tr>
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<tr>
<td>Knowledge</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Need for special training</td>
<td>ns</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Seriousness of type 2 DM</td>
<td>p&lt;0.05</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Value of blood glucose control</td>
<td>ns</td>
<td>p&lt;0.05</td>
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<tr>
<td>Psychosocial impact of type 2 DM</td>
<td>p&lt;0.05</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Patient Autonomy</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

*ns = no statistical significance*
HbA1c Results

• Conversation Map Group
  ➢ HbA1c levels were significantly decreased
    mean difference 1.2%, p < 0.05

• Traditional Education Group
  ➢ HbA1c levels were significantly decreased
    mean difference 0.76%, p < 0.05

• No significant difference in HbA1c changes
  between groups

Focus Group Results

Common Themes
• Benefits of Early Education Uptake
• The Need for Specialized Education
• Education Encouraged Multiple Lifestyle Management Behaviour Changes

Conversation Map
• Experiential Learning Environment
• Self-Directed Approach to Learning
• An Attitude of Feeling Socially Supported
• Visualization of Specific Diabetes Management Needs

Traditional Education
• Low Group Participation
Conversation Map Themes

- Experiential Learning Environment
- Self-Directed Approach to Learning
- An Attitude of Feeling Socially Supported
- Visualization of Specific Diabetes Management Needs

Traditional Education Theme

- Low Group Participation

“I think when you get to our age, it’s not telling us these vegetables are good for us. I know what is good and I know what is not good. I want to create conversation and discuss my struggles with others and know that I’m not alone. The information you were trying to give is valued but the lesson plan needs to be revised.”
Concluding Thoughts

- Conversation maps are an effective way of providing diabetes education
  - Effective at improving patient knowledge and supporting knowledge retention, and creating behaviour change
  - Results indicate CM may have a greater impact on patient attitudes toward diabetes than traditional methods

Implications to Practice

- Practice-based evidence for future program development
- Platform for further research in diabetes education
THANK YOU

QUESTIONS?

Guelph Family Health Team
Appendix P: Speaker Agreement for Presenting Research at 2013 Dietitians of Canada Regional Conference

Central & Southern Ontario Conference
March 1, 2013
Speaker Agreement

Dear Laura:

Thank you for agreeing to speak at our upcoming Dietitians of Canada Regional Conference, Central and Southern Ontario to be held on Friday, March 1, 2013 in Toronto. This speaker agreement describes the terms and conditions of your agreement to speak at the event, to be held at:

Metro Toronto Convention Centre
North Building, 235 Front St.
Toronto ON

Please read this agreement carefully and sign, indicating your agreement to these terms. Fax or scan and email a signed copy to the fax/email below. Retain a copy for your reference.

Dietitians of Canada, attn: Frances Scovill
Fax: 416-596-0603
E-mail: frances.scovill@dietitians.ca

You agree:

• that the information you will present is accurate, to the best of your knowledge.
• that the information you will present is your own original work and will not infringe on any personal or property rights of any other person or organization.
• that the information you will present is based upon current, scientific evidence.
• not to include advertising or promotion of specific products or services as this contradicts DCs mandate to provide high quality professional development and is prohibited under this agreement.
• that the session may be recorded for future posting on the Dietitians of Canada website.
• to provide electronic handouts that delegates can download in advance of the event.
• to make your own travel arrangements as per the attached DC Expense Policy.
• to submit expenses, adhere to the expense and travel procedures as outlined in the Expense Policy to ensure proper reimbursement; include receipts for all travel and meals.
Dietitians of Canada will provide the following speaker benefits:

- HONORARIUM/ FEE of $250 CDN
- COMPLIMENTARY FULL REGISTRATION
- TRAVEL and MEAL EXPENSES – In accordance with the Expense Policy.

Cancellation

In the event that your speaking session is cancelled, any non-refundable expense for airline tickets purchased at our instructions would be reimbursed. However, DC would not be liable for any further expenses, costs, or damages incurred by you in connection with the event. If any emergency requires your cancellation, you will agree to provide cancellation notification prior to the event. This agreement is non-transferable.

I have read and agree to comply with the above guidelines.

[Signature] [Sept 14, 2012]
Title of Presentation: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with Type 2 diabetes mellitus

Researchers: Laura Briden RD MSc(cand) CDE, Alicia C. Garcia PhD RD CFE, Diabetes Care Guelph

Program: Diabetes Care Guelph, The Guelph Family Health Team

Abstract: Research was conducted examining different delivery methods of diabetes self-management education. Adult patients with type 2 diabetes mellitus were selected from a convenience sample, randomized and exposed to two education delivery methods, one group receiving education through conversation maps and the other through a traditional Powerpoint presentation. A pre-test/post-test design assessed changes in participants’ knowledge and attitudes. Focus groups were conducted to explore participant’s perceptions of the different education delivery methods and gain qualitative information on behavioural changes. The study indicated that the conversation map is a more effective delivery method compared to traditional group education.
Appendix R: Ethics Approval Notice

Principal Investigator: Dr. Alicia Garcia
File Number: 10060
Review Level: Delegated
Approved Local Adult Participants: 140
Approved Local Minor Participants: 0
Protocol Title: Evaluating the impact of two different forms of diabetes self-management education on knowledge, attitude and behaviours of patients with Type 2 diabetes mellitus (REB #17/649)
Department & Institution: Brescia/Nutrition and Food Sciences, Regional Mental Health Care, London
Sponsor:
Ethics Approval Date: August 23, 2012
Expiry Date: December 31, 2012
Documents Reviewed & Approved & Documents Received for Information:

<table>
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<th>Document Name</th>
<th>Comments</th>
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<td>Revised Study End Date</td>
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This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines, and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for REB’s as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB’s periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the University of Western Ontario Updated Approval Request Form.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

The Chair of the HSREB is Dr. Joseph Gibert. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Signature

Ethics Officer to Contact for Further Information

[Contact information]

This is an official document. Please retain the original in your files.
Curriculum Vitae

Name: Laura Beth Briden

Post-secondary Education and Degrees:

University of Guelph
Guelph, Ontario, Canada
2002-2006 B.A.Sc.

London Health Sciences Comprehensive Dietetic Internship Program
2007-2008 R.D.

Certified Diabetes Educator Certification
2010 C.D.E

The University of Western Ontario
London, Ontario, Canada
2010-2012 M.Sc.F.N.

Honours and Awards:

Dr. Patricia Giovannetti Graduate Studies Award
2010

Related Work Experience:

Teaching Assistant
Brescia University College,
The University of Western Ontario
2010-2011

Registered Dietitian, Diabetes Educator
Diabetes Care Guelph
The Guelph Family Health Team
2008- present