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# Using Communities of Practice to Enhance Diabetes Education

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**Abstract:** This session presents the results of a pilot study in Diabetes education using a model, SystemCHANGE™ within a Communities of Practice. Communities of Practice can be incorporated effectively in patient health education to produce sustainable behavioral changes to affect an individual's ability to manage a chronic disease in a positive manner.

Over 25 million individuals in the U.S. are diagnosed with Diabetes. This disease, especially if not managed properly can lead to serious complications. Blindness, renal failure, amputation, and stroke are just a few of the complications. Therefore, successful models to educate individuals with diabetes about the management of the many tasks and symptoms that are necessary to care for themselves are important.

## Literature Review

This literature reviews outlines the current educational model in diabetes education, the SystemCHANGE™ model, and Communities of Practice as an educational strategy.

Current practice is to provide patients with a standard course of basic education about managing their diabetes (American Diabetes Association, 2013). During this course, at least six of the nine recommended topics are covered. These include such things, as monitoring of blood sugar levels, nutrition, exercise, cholesterol, blood pressure, and foot care, to name a few topics. However, successful long-term behavior changes require expensive ongoing self-management support to continue and improve the initial gains made in the basic education classes. Usually this ongoing self-management support is provided within the health care system. Peer-groups are viewed as one promising and inexpensive way to provide ongoing self-management support. Numerous research on these groups, primarily using cognitive/behavioral methods has shown limited and inconsistent success, with no single approach emerging as clearly effective (Dale, Williams, & Boyer, 2012).

SystemCHANGE™ is an innovative behavior change method based in social ecological theory. It focuses on redesigning individuals daily routines at the systems level. This is done by encouraging individuals, their families, or other support individuals in their lives to use multiple small experiments to make changes in their lifestyle. SystemCHANGE™ teaches individuals and their families how to use an iterative process with a progressive series of steps to change the everyday circumstances and environment of their lives in order to make a desired behavior the easiest, default behavior. Participants learn skills for building habitual lifestyle behaviors into their daily activities, promoting success even when motivation fluctuates. We combined the

Communities of Practice model with a SystemCHANGE™ approach to behavior change to create a new care model for ongoing self-management support, Diabetes SystemCHANGE™ (Moore & Charvat, 2002; Moore, Charvat, Andrisin, et al., 2009)

Communities of Practice are groups of individuals who operate around a common purpose for co-creating knowledge among the members. As outlined by Lave and Wenger (1991), the individuals range from novice to experts in the knowledge base that connects them. There are three main threads within a Community of Practice: meaning making and sense making around the common purpose along with identity formation of the members. For the purpose of this study identity formation was defined as “by creating their own discourses (i.e. language with specific symbols [story boards], rituals [interacting between the educational sessions], and codes) communities are able to operate as recognizable entities within a program of change” (Veenswijk & Chesalita, 2011, p. 71). Meaning refers to the how community members link the experience within the community of practice to their own experiences, so that in some respects they overlap, reinforce or lead to a reframing of previous experiences. Sense making refers to the assumptions that members will adapt the practices of the community of practice to their own situations. They will then test and perhaps revise their assumptions and even their practices because of the community of practice experience.

### **Research Design**

The following section will provide information about the purpose, research questions, and significance of study and data collection.

The purpose of this research project was to determine the initial *efficacy*, *acceptability*, and *feasibility* of a community-based diabetes peer support program using SystemCHANGE™ strategies as compared to usual care (support groups led by professionals), and to calculate effect size for a future larger trial.

The study focused on the following aims or research goals:

**Aim 1:** Determine the effects of Diabetes SystemCHANGE™ peer support compared to usual care for support on three clinical risk factors for diabetes complications: A1c, blood pressure, and LDL cholesterol.

**Aim 2:** Determine the effects of Diabetes SystemCHANGE™ peer support compared to usual care for support on two psychobehavioral outcomes: diabetes self-care activities and diabetes self-efficacy.

**Aim 3:** Determine the effect size of Diabetes SystemCHANGE™ peer support on A1c, blood pressure, LDL cholesterol, diabetes self-care activities, and diabetes-related self-efficacy.

**Aim 4:** Evaluate the *acceptability* of Diabetes SystemCHANGE™ support groups to participants.

**Aim 5:** Evaluate the *feasibility* of a larger study of Diabetes SystemCHANGE™.

This paper addresses the primary question from Aim 4. What was the acceptability of the Diabetes SystemCHANGE™ support groups to participants? In response to these aims, this pilot study used a recently developed, behavior change model, SystemCHANGE™ (Moore, Charvat, & Andrisin, 2012) along with a Communities of Practice component (Lave & Wenger, 1991; Wenger-Trayner, Fenton-O’Creevy, Hutchinson, Kubiak, & Wenger-Trayner, 2015) to ascertain if a better ongoing diabetes education curriculum could be developed.

The significance of this study is that it has the potential for providing a mechanism for supporting long-term behavioral change, which has always been an important but elusive goal in diabetes education. In addition, it contributes to the literature on communities of practice by extending the concept into the area of diabetes and community education.

### **Data Collection**

The participants were adults with type 2 diabetes ranging in age from 30 – 74 years old. The second qualification was that the participants need to have engaged in a class in basic self-management diabetes education that covered at least six of the nine content areas listed in the National Standards for Diabetes Education and Support (Hass, et al, 2013) prior to the study. The sample size was 48 participants. We randomly assigned participants to the groups. There were two experimental groups and two comparison groups.

This pilot study had two types of educational interventions: SystemCHANGE™ with a Community of Practice component (experimental group) and the standard diabetes education model (comparison group). The participants attended 12 sessions that lasted 1.5 hours each over the course of six months. There were four groups with 10-15 participants each. A component of each session for both the experimental and comparison group sessions was a brief review of one of the six selected diabetes topics from the prior class in basic self-management diabetes education.

Two individuals who are diabetic, non-healthcare professionals and trained in the SystemCHANGE™ model and the concepts of Community of Practice led the experimental groups. Since we were incorporating the Community of Practice concept into the experimental group, we did not want trained diabetes educators to lead the groups. In addition, the SystemCHANGE™ model is so different from the current education model in diabetes education, that we felt that peer-trainers would be better able to engage the learners in this innovative form of behavioral change. The focus was on building small self-care behaviors into daily routines, so they become ordinary daily habits.

Communities of Practice were formed to provide additional educational and behavioral support on an on-going basis between sessions. The comparison groups, designated as Usual Care Groups, were led by a staff member of the Diabetes Partnership in the metropolitan area and included provision of information about the six selected topics, group discussions and the use of some problem solving and cognitive behavioral methods. This pilot study was conducted in an urban metropolitan setting.

For the participants, we reframed the concept of Community of Practice. We wanted the participants in the experimental group to focus on the process and not the terminology. In addition, we needed to be able to help the participants to understand the concept easily. It was imperative that it could be easy to explain in the short time that we had and to provide a metaphor that we hoped the participants could relate to in their experiences.

We began the first session where we introduced this concept by asking the participants in the experimental groups, where we were using this model, if they had previous experience being part of a group. For instance, book club, church group, support group. We spent some time talking about the types of groups that they had experienced. We then talked about the types of small groups that we hoped to form during our time together. The metaphor that we used was of

mountain climbers. We choose this metaphor because having a chronic health problem such as diabetes and taking care of oneself can feel like you are trying to climb a mountain.

Within the mountain climber metaphor, we used the concept of base camps to represent a community of practice. When mountain climbers are trying to scale a large mountain, such as K2 or Mount Everest, they do not just keep moving up the mountain. They climb the mountain to a certain point to begin to acclimate to the environment, including the altitude. Then they return to the previous base camp, so that their bodies can adjust. The base camp then moves up and then the climbers move up and then back again (Viesturs & Roberts, 2009).

The important point is that this is a slow process of change for their bodies. That is what we were asking them to do with the SystemCHANGE™ model. They were asked to determine very small changes that they could try out between the sessions. In addition, between the sessions we were asking them to engage with their small base communities to help them incorporate this change into their daily routines. Then after two weeks, they would get together or return to the base camp to discuss the results of the small experiments or changes and to think about what they could do next, so that they could climb their own mountain.

### **Data Analysis**

All participants had pre and post-intervention measurements of A1c, blood pressure and LDL cholesterol. In addition, participants completed a Summary of Diabetes Self-Care Activities and the Diabetes Empowerment Scale – Short Form to provide information about psycho-behavioral variables. The variable Diabetes Self-Care Activities was chosen because diabetes behavior change is the unique focus of diabetes self-management education and support. The variable Diabetes Self-Efficacy was chosen because it is well established as an important cognitive mediator of effective diabetes self-management behavior change. Evidence confirms that interventions that enhance self-efficacy increase the effectiveness of diabetes self-management education and support (Hass et al., 2013).

Descriptive statistics for each support group consisting of the means and standard deviations for continuous variables and counts with associated proportions for categorical variables were calculated. Since sample size was fixed at 50 participants for this pilot project, no sample size calculations were conducted for this study. Statistical significance for all statistical tests performed on the data was set at  $\alpha = 0.05$ . All data that required satisfaction of the normality assumption was assessed using the Kolmogorov-Smirnov test. Complete cases only were used for analysis.

Finally, one of the researchers attended all the sessions for both experimental groups where the Communities of Practice model was used to collect qualitative observational data and to observe the “Base Communities” in action. The qualitative data was then coded and analyzed to ascertain the degree that the base communities were functioning as communities of practice by helping their members make sense of the educational information, and most importantly, ascertain whether their participation in the base communities affected their sense of identity. By sense of identity, we were looking to see if there was a change from thinking of themselves as Diabetics to someone who had diabetes. In the first instance, where someone views themselves as a Diabetic, there is a tendency to focus on that aspect of themselves to the exclusion of the sum total of who they are as a human being. People who view themselves as an individual who

just happens to also have diabetes, appear to relate differently to the world and engage in their self-care and management of their health issues in a different manner.

## **Results**

Across all of the physiological and psycho-behavioral variables, there were no significant changes in the two comparison groups and one of the experimental groups. However, one of the experimental groups using SystemCHANGE™ and Communities of Practice did show a statistical significant change in a positive direction for all of the variables. However, because of the small size of this pilot study, it is not possible to generalize the results. This group was the only group that was successful in forming smaller Communities of Practice of two to three individuals across the members of the larger group. These smaller Communities of Practice consistently shared and co-created knowledge during the sessions while providing on-going support and education between the sessions in various forms of communications from phone calls to emails.

From the observational data about the small Communities of Practice, two important insights emerged. In the one experimental group, there was no formation of base communities. In this group, there was no communication between the group members between the educational sessions. In addition, during the educational sessions these group members tended to sit apart from one another. A primary reason for this was that with this group, the first two sessions were chaotic because of transportation and weather related issues. Therefore, of the 12 members in the group, some were able to attend the first session and some the second session, with only a few able to attend both sessions. This did not allow for the proper time for members to decide on a base community of their choice. However, the second experimental group, which showed significant changes in the physical and psychosocial variables, were able to form base communities during the first meeting that endured over the length of the study. One of the base communities even added another member in the 4<sup>th</sup> session successfully.

At the end of the study, the individuals in the experimental group were asked about their participation in the study. Participants in the experimental group, that did not form base communities tended to focus their remarks on the educational value of the material presented. For instance, one participant said, *“This group gave me the chance to learn about new things, it helped me with issues that were important to my health right now.”* While the participants in the other experimental group did comment on the content learned, their focus tended to be on the relationships and the support of the base communities. A participant noted, *“While I received a lot of good information about how to care for myself, it was the use of making small changes little by little. and the support of my community that allowed me to make changes in my daily habits that have helped me feel healthier than I have in a long time. I know that I have a long way to go but this has been a great start.”*

## **Discussion**

As has been previously noted elsewhere (Monaghan & Columbaro, 2009), Communities of Practice created in an artificial atmosphere such as a learning environment face particular challenges that need to be addressed in order to ensure the success of the Community of Practice. In the experimental group that was successful in forming many smaller Communities of Practice,

all members were present at the formation of the Community of Practice and were provided with enough time to bond while also being given the opportunity to self-select their Community of Practice. The other experimental group ran into unforeseen problems at the first session that prevented all of the members from attending. Then they encountered additional attendance challenges at the next session. As a result, they eventually morph into one Community of Practice, which was too large to provide the individual support that was important in the other group. Although they tried to form smaller Community of Practice, it did not happen.

While this is only a pilot study, it suggests that the concepts of Community of Practice has the potential to be incorporated effectively into patient health education to create sustainable changes in behavior that can affect an individual's ability to manage a chronic disease such as diabetes.

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